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**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
OAKLAND DIVISION**

BABAK HATAMIAN and LUSSA DENNJ
SALVATORE, individually and on behalf of
all others similarly situated,

Plaintiffs,

v.

ADVANCED MICRO DEVICES, INC.,
RORY P. READ, THOMAS J. SEIFERT,
RICHARD A. BERGMAN AND LISA T.
SU,

Defendants.

CASE NO. 14-cv-00226-YGR

CLASS ACTION

**EXHIBITS 61-70 ATTACHED TO THE
DECLARATION OF JASON C. HEGT IN
SUPPORT OF DEFENDANTS' MOTION
FOR SUMMARY JUDGMENT AND IN
SUPPORT OF DEFENDANTS' MOTION TO
EXCLUDE TESTIMONY OF CHAD
COFFMAN, SCOTT THOMPSON, AND
JASON S. FLEMMONS**

Exhibit 61

**UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA**

BABAK HATAMIAN, et al.,
Plaintiffs,

v.

ADVANCED MICRO DEVICES, INC., et al.,
Defendants


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Case No. 3:14-cv-00226-YGR

REBUTTAL EXPERT REPORT

OF

RAHUL KAPOOR

A handwritten signature in black ink, reading "Rahul Kapoor", written over a horizontal line.

Rahul Kapoor

December 20, 2016

Contents

I.	Qualifications.....	1
II.	Assignment and Plaintiff's Allegations	2
	A. Assignment.....	2
	B. Plaintiff's Allegations.....	3
III.	Summary of Opinions	5
IV.	Background on AMD	8
	A. Overview of Microprocessors.....	9
	B. AMD's Microprocessor Supply Chain.....	11
	1. AMD's Upstream Supply Chain: Suppliers to AMD	11
	2. AMD's Downstream Supply Chain: AMD's Customers.....	15
	C. AMD's Fusion Initiative.....	20
	D. Other Firms in the Microprocessor Industry	23
	1. Intel Corporation	23
	2. Nvidia Corporation	25
	3. ARM Holdings	26
	4. Limitations of Comparing AMD to Other Firms in the Microprocessor Industry.....	27
	E. AMD Earnings Guidance	28
V.	AMD's Sales Forecasting Process Was Reasonable and Consistent with Common Sales Forecasting Processes	29
	A. Common Sales Forecasting Processes	29
	B. Sales Forecasting Challenges	34
	1. Forecasting Sales for New Products Is More Error-Prone than Forecasting Sales for Existing Products	34
	2. Forecasting New Product Supply Is Difficult.....	38
	C. AMD's Forecasting Process Was Consistent with Common Forecasting Processes.....	44
	1. AMD's Demand Forecasting Process	44
	2. AMD's Forecasting Challenges	49
VI.	AMD's Forecast Misses in Q2 2012 and Q3 2012 Were Consistent with Changes in Macroeconomic and Industry Conditions	55

A.	Allocation of Limited Llano Inventory to OEMs Was Reasonable And Did Not Result In AMD Missing Its Q2 2012 or Q3 2012 Forecasts	56
1.	Allocation of limited Llano inventory to OEMs was reasonable	57
2.	Llano Sales Increased Significantly from 2011 to 2012 and the Evidence Does Not Substantiate a Systematic Pattern Indicating Customers Who Did Not Receive Large Amounts of Llano in Q3 2011 Did Not Purchase Large Amounts of Llano in Q2 and Q3 2012.....	60
3.	Channel sales in 2011 and 2012 were not characterized by “back-to-school” or “holiday” seasons.....	67
4.	AMD’s Customers Did Not Skip Llano and Move on to Trinity	72
B.	AMD’s Q2 2012 and Q3 2012 Forecast Misses Were Likely Driven By Significant Shifts in the PC Market and Industry Characteristics	78
1.	The PC Market Was Negatively Impacted by Global Macroeconomic Conditions and Growth in Demand for Handheld Devices.....	80
2.	Industry Characteristics and AMD Sales Patterns Added Additional Forecasting Challenges.....	85
3.	AMD’s Forecast Misses in Q2 2012 and Q3 2012 Were Consistent with Unexpected Changes in Macroeconomic and Industry Conditions and Not Specific to Llano or Channel Customers	102

I. Qualifications

1. My name is Rahul Kapoor. I am a tenured Associate Professor of Management at the Wharton School of the University of Pennsylvania, where I have been a faculty member since 2008. I have taught undergraduate and graduate courses in Technology Strategy, Management of Technology, Managing the Emerging Enterprise, and Competitive Strategy. In addition to my duties as a professor, I have served as a co-organizer of the Annual Wharton Technology and Innovation Conference since 2010, and as a member of the MBA Executive Committee.
2. I received a B.A.Sc. in Materials Engineering from Nanyang Technological University in Singapore in 1997, an M.B.A. from the National University of Singapore, and an M.Sc. in Management in 2006 and a Ph.D. in Management in 2008, both from INSEAD in France.
3. Prior to joining the Wharton School and completing my Ph.D., I worked in the semiconductor industry from 1997 to 2004, first as an Engineer at Texas Instruments as part of a global product development team, and later as a Manager at UTAC, a start-up semiconductor manufacturer. At UTAC, I supervised the development and commercialization of new semiconductor products, and managed strategic relationships with customers and suppliers.
4. I have published articles in leading peer-reviewed management journals. A number of my articles are recognized for their important academic contributions and draw on extensive quantitative and qualitative data from the semiconductor sector. My research focuses on the strategies pursued by established and emerging firms in technology-based industries. Many of my articles address the strategic management of new products in technology-based industries. I have also authored two articles based on findings from surveys of executives documenting the recent trends, challenges, and opportunities in the semiconductor industry.
5. I was elected a member of the executive committee of the Business Policy and Strategy division of the Academy of Management (2013 to 2015), and as Representative-at-Large for both the Strategic Management Society (2013 to 2015) and for the Technology and Innovation Management Division of the Academy of Management (2012 to 2014).
6. I currently serve on the editorial boards of three of the leading management journals (*Academy of Management Journal*, *Organization Science*, and *Strategic Management Journal*) and of the recently launched INFORMS journal in strategy, *Strategy Science*. I have also served

as a reviewer for *Administrative Science Quarterly*, *Management Science*, *Research Policy*, and *Strategic Entrepreneurship Journal*. I am a member of the Academy of Management, the Strategic Management Society, and the Strategy Research Forum. I have been invited to present my research at many leading universities and conferences, and my papers have been cited more than 1,000 times since 2011, according to Google Scholar.

7. My curriculum vitae is included as Appendix A. I am being compensated for my work on this case at a rate of \$950 per hour. Staff at The Brattle Group has assisted me by performing work at my direction. All the opinions and conclusions stated in this report are my own. My compensation is not contingent upon my testimony or on the result of this proceeding. The Brattle Group's compensation is not contingent upon the outcome of this matter.

II. Assignment and Plaintiff's Allegations

A. ASSIGNMENT

8. I have been retained by Latham & Watkins LLP, counsel for Advanced Micro Devices, Inc. ("AMD" or the "Company"), Mr. Rory P. Read, Mr. Thomas J. Seifert, Mr. Richard A. Bergman, and Ms. Lisa T. Su (collectively, and together with AMD, "Defendants"), to provide expert services in the matter of *Babak Hatamian, et al. v. Advanced Micro Devices, Inc., et al.* I have been asked to provide an opinion on the semiconductor industry, sales forecasting, generally, and by AMD in particular, during the period April 4, 2011 to October 18, 2012 (the "Class Period")¹, and to respond to the expert reports of Dr. Scott E. Thompson, Mr. Chad Coffman, and Mr. Jason S. Flemmons, all dated November 18, 2016, to the extent their reports address these issues.

9. My opinions are based on my knowledge and expertise gained during my professional career. In forming my opinions in this matter, I have considered documents produced in this matter. A list of the documents I have considered is attached as Appendix B. The opinions stated in this report are based on the evidence that has been provided to me to date. My work in this

¹ "Corrected Amended Class Action Complaint for Violations of the Federal Securities Laws," June 11, 2014 ("Complaint").

matter is ongoing, and I reserve the right to modify or supplement my conclusions as additional information is made available to me, or as I perform further analysis.

B. PLAINTIFF'S ALLEGATIONS

10. AMD first started shipping “Llano” chips in early 2011.^{2,3} On April 4, 2011 (the beginning of the Class Period), Plaintiffs allege that AMD misleadingly reported that Llano production yields were in line with expectations,⁴ and further allege that yields were not satisfactory throughout 2011.⁵ On September 28, 2011, AMD announced that it expected its Q3 2011 revenues to exceed its Q2 2011 revenues by four to six percent, rather than eight to 12 percent as previously forecasted.⁶ AMD indicated that its revised expectation was due to Llano supply issues at GlobalFoundries.⁷ During its subsequent Q3 2011 earnings call on October 27, 2011, AMD reported that Llano shipments were expected to increase⁸ and that customer demand for APUs was “strong.”⁹ Plaintiffs allege that this statement was misleading because AMD was only able to ship Llano to its “top-tier customers, leaving AMD’s important channel customers without any supply of Llano at all” during the first three quarters of 2011.¹⁰

² Relevant background regarding AMD and its products is included in Section IV, below. Terms in this Section that are not otherwise defined are defined below.

³ AMD, Form 8-K, April 21, 2011, p. 2 (“AMD commenced revenue shipments of AMD’s first Fusion APU for mainstream notebooks (codenamed ‘Llano’) that combines discrete-class graphics capabilities, personal supercomputing performance and AMD AllDay power.”); “AMD Reports First Quarter 2011 Results – CFO Commentary,” AMD, Press Release, April 21, 2011, p. 2 (“APU platforms are gaining transaction in the market as evidenced by a faster than anticipated ramp as unit shipments tripled over the prior quarter. Adding to this momentum, we started shipping Llano, our high-end APU, late in the first quarter of 2011.”).

⁴ Complaint, ¶8.

⁵ Complaint, ¶¶92-95.

⁶ Complaint, ¶13; AMD’s Q3 2011 revenues exceeded its Q2 2011 revenues by seven percent, which exceeded the revised guidance range it provided in the September 28, 2011 pre-announcement; AMD, Q3 2011 Earnings Conference Call (Rory Read), October 27, 2011, p. 2 (“AMD’s third-quarter revenue was \$1.69 billion, up 7% from the prior quarter and up 4% year over year.”).

⁷ Complaint, ¶199.

⁸ Complaint, ¶14.

⁹ Complaint, ¶207.

¹⁰ Complaint, ¶¶10, 13, 15.

11. Specifically, Plaintiffs allege that by the time channel customers began to receive Llano in December 2011, demand was weak.¹¹ Plaintiffs allege that AMD's failure to supply Llano at an earlier date damaged channel customer relationships.¹² Plaintiffs also allege that AMD's channel customers had abandoned their efforts to build Llano-compatible products and were instead focused on the next generation of AMD's APUs.¹³

12. On July 9, 2012, AMD announced that it expected its Q2 2012 revenues to decrease approximately 11 percent from its Q1 2012 revenues, instead of an increase of zero to six percent as AMD had previously forecasted.¹⁴ Nonetheless, AMD anticipated that Llano would continue to be "an important product throughout the balance of this year and into 2013."¹⁵ Plaintiffs allege that AMD's statements were "knowingly misleading ... in the context of a one-year lifecycle for a microprocessor like Llano."¹⁶

13. AMD released its Q3 2012 earnings press release on October 11, 2012. During the subsequent conference call on October 18, 2012, AMD announced that it had written down \$100 million of Llano inventory.¹⁷ Plaintiffs claim that this announcement revealed the "full truth" of Plaintiffs' allegations.¹⁸

14. Although Plaintiffs' allegations in their Complaint focus on AMD's sales to channel customers,¹⁹ their allegations have shifted and now focus on OEM customers, as well. In particular, Plaintiffs' expert, Dr. Thompson, contends that in 2011, OEM customers received an insufficient supply of Llano products.²⁰ Dr. Thompson states that this caused OEMs to have

¹¹ Complaint, ¶16.

¹² Lead Plaintiffs' Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.'s First Set of Interrogatories, August 12, 2016, p. 25.

¹³ Complaint, ¶¶16, 133, 135.

¹⁴ Complaint, ¶255.

¹⁵ Complaint, ¶267.

¹⁶ Complaint, ¶21.

¹⁷ Complaint, ¶22.

¹⁸ Complaint, ¶22.

¹⁹ *See, e.g.*, Complaint, ¶¶10, 13, 15, 16.

²⁰ Thompson Report, ¶¶128-29.

“trust issues,” and resulted in OEMs reducing their demand in 2011 for Llano products.²¹ Dr. Thompson also contends that, by the end of 2011 and into early 2012, OEMs were “moving to next generation” products, including Trinity, making Llano “obsolete technology.”²² According to Dr. Thompson, because “OEM customers were already shifting their demand to Trinity” by early 2012, there was “weak demand” for Llano in 2012.²³

III. Summary of Opinions

15. My report provides a detailed discussion of my opinions in this matter, and a brief summary of my opinions follows.

16. Section IV provides general background information on AMD, including its products, its suppliers, and its OEM (“Original Equipment Manufacturer”) and channel customers. I also describe the end markets (desktop and notebook personal computers²⁴) that AMD targeted with its microprocessor products and well as other players in the microprocessor industry and how their businesses differed from that of AMD.

17. **AMD’s sales forecasting process was reasonable and consistent with common sales forecasting processes.** Section V describes sales forecasting processes generally and AMD’s forecasting process in particular. Forecasting, including sales forecasting, is an important activity that firms engage in on a regular basis and involves making a prediction about a future event or a metric of interest, including projected financial figures. There is no universal “best” method for all forecasting situations; rather, the forecasting method is a function of a variety of factors, including the availability of marketplace data, industry characteristics, characteristics of the firm’s products, and industry trends. Although forecasting is an important business function, forecasting is inherently uncertain and difficult, particularly in certain industries and for certain products. This is particularly true where a firm forecasts sales of a *new* product, because both demand and supply are uncertain.

²¹ Thompson Report, ¶¶129-32.

²² Thompson Report, ¶¶151, 157.

²³ Thompson Report, ¶¶157, 180.

²⁴ AMD documents I have reviewed often referred to notebook personal computers (“PCs”) as “mobile” PCs.

18. During the Class Period, AMD developed its sales forecasts using qualitative methods, including both top-down and bottoms-up forecasting approaches. AMD developed internal forecasts (looking at multi-year, annual, and quarterly time horizons), and also provided annual and quarterly earnings guidance to the public. AMD's qualitative forecasting approach was reasonable and consistent with commonly used approaches. However, during the Class Period, AMD's ability to accurately forecast was made particularly difficult by product- and industry-specific factors that reduced AMD's visibility into the supply of, and demand for, certain products. This was especially true with respect to AMD's Llano product line—a microprocessor based on a new technology that was manufactured on a new manufacturing process node by a third-party foundry, GlobalFoundries. Forecast error for sales of new products (like Llano) is typically larger than for established products because firms lack historical sales data and face significant market uncertainty. The forecasting challenge can be exacerbated by supply-side constraints and uncertainties regarding the availability of supply of a new product that is sufficient to match forecasted demand.

19. AMD's missed forecasts in Q2 2012 and Q3 2012 were likely the result of forecasting challenges and unexpected changes in the PC industry. The evidence does not indicate that these misses were the result of Llano supply constraints in 2011. In their Complaint, Plaintiffs allege that, as a result of Llano manufacturing problems in 2011, AMD experienced a Llano supply shortage and allocated Llano products to OEM customers over channel customers.²⁵ According to Plaintiffs, this allocation in 2011 resulted in the channel having reduced demand for Llano products,²⁶ and led to AMD missing its public guidance in Q2 2012 and Q3 2012.²⁷ However, in more recent documents, Plaintiffs have alleged a different theory. Plaintiffs now allege that AMD's 2011 supply shortage of Llano resulted not only in reduced sales to channel customers in 2012, but also to OEM customers, "whose own sales targets were imperiled by the

²⁵ Complaint, ¶¶15, 144.

²⁶ Complaint, ¶16.

²⁷ See, e.g., Supplemental Responses to Su Interrogatories, November 28, 2016, pp. 18-19; Complaint ¶¶ 18, 142, 273, 279-80; Coffman Report, ¶107 ("Plaintiffs allege the low channel sales that drove the Q2 2012 revenue miss are attributable to the subject of Defendants' knowing or reckless alleged misstatements and/or omissions. If Plaintiffs' allegations are correct, that Defendants knew or were reckless in not knowing about the supply and demand issues...").

chronically unreliable and ever-constrained Llano supply.”²⁸ Thus, according to Plaintiffs, because AMD had an “inadequate supply of Llano in 2011,” AMD missed its Q2 2012 and Q3 2012 guidance due to “poor channel sales in China and Europe and weak consumer demand in the OEM business.”²⁹ As explained in Section VI, neither of Plaintiffs theories is consistent with the available evidence. In particular:

- a. **The evidence does not indicate a relationship between AMD’s allocation of Llano to OEM customers in 2011 and channel customer activity during Q2 2012 and Q3 2012.** As I explain in Section VI.A., in the technology industry, and in the semiconductor industry in particular, allocation decisions are common. Moreover, the data relevant to this case indicates, contrary to Plaintiffs’ argument, that: (i) the channel purchased substantial Llano product in 2012, and there is no systematic pattern indicating that customers who did not receive large amounts of Llano in Q3 2011 did not purchase Llano in subsequent quarters, including Q2 and Q3 2012; (ii) AMD’s channel sales were not characterized by a back-to-school or holiday “window” for Llano or any product, and thus Llano did not miss that sales “window”; and (iii) AMD’s customers did not skip purchases of Llano in favor of Trinity.
- b. **By contrast, AMD’s Q2 2012 and Q3 2012 forecast misses are consistent with unexpected macroeconomic and industry changes, as well as several industry-specific factors.** As I explain in Section VI.B., AMD derived approximately 75 percent of its revenue from the consumer PC market, which was “highly correlated with macroeconomic conditions.”³⁰ In 2012, unexpected macroeconomic factors in Europe and China resulted in a sharp downturn in demand for personal computers (“PCs”) in those regions. Simultaneously, consumers shifted from PCs to handheld devices (smartphones and tablets), decreasing the total market for AMD’s x86 microprocessors. Notably, the speed at which this shift occurred exceeded industry forecasts and was unexpected. These shifts in the PC market disrupted the entire PC

²⁸ Second Supplemental Responses to AMD Interrogatories, November 28, 2016, p. 132.

²⁹ Coffman Report, ¶9.

³⁰ “With or Without Fabs, Unfortunately AMD is Still AMD,” *J.P. Morgan*, October 19, 2012 [AMD-021-002259992], p. 5 (“AMD derives roughly 75% of its revenue from the consumer PC end market, which is highly correlated with macroeconomic conditions.”).

ecosystem, making it more difficult to forecast demand and ultimately reducing sales of AMD's Llano and non-Llano products in Q2 and Q3 2012. Indeed, detailed analyses of AMD's forecast misses in Q2 2012 and Q3 2012 demonstrate that AMD's sales shortfalls mirror industry-wide reductions in PC demand, spanned all of AMD's microprocessor products, were greater for non-Llano products than for Llano and, even within Llano products, were greater among OEM customers than among the channel customers that Plaintiffs claim were harmed in 2011. AMD's forecasting challenges during the Class Period were exacerbated by characteristics of the industry, namely the position of microprocessor firms upstream in the PC supply chain, Intel's market dominance, and the tendency of sales to be heavily weighted towards the end of each quarter.

IV. Background on AMD

20. AMD is a global semiconductor company.³¹ In 2011 and 2012, AMD's net revenues were \$6.6 billion and \$5.4 billion, respectively.³² Seventy-six percent and 74 percent of AMD's net revenues in 2011 and 2012, respectively, came from its Computing Solutions segment (sales of microprocessors, chipsets, and embedded processors) while the remaining 24 percent and 26 percent, respectively, came from its Graphics segment (sales of graphics, video and multimedia products).³³ AMD's microprocessor products were designed primarily for servers and personal computers.³⁴ PCs include desktop PCs and mobile PCs (also referred to as "notebooks" or

³¹ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 2 ("We are a global semiconductor company with facilities around the world.").

³² AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 67.

³³ AMD, 2012 Annual Report on Form 10-K, February 21, 2013, pp. 47-48 ("We use the following two reportable operating segments: the Computing Solutions segment, which includes microprocessors, as a standalone devices or as incorporated as an APU, chipsets and embedded processors; and the Graphics segment, which includes graphics, video and multimedia products developed for use in desktop and notebook computers, including home media PCs, professional workstations and servers as well as revenue received in connection with the development and sale of game console systems that incorporate our graphics technology.").

³⁴ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 4 ("We currently design, develop and sell microprocessor products for servers, desktop PCs and mobile devices, including mobile PCs and

Continued on next page

“laptops”). At the end of 2012, approximately 85 percent of AMD’s Computing Solutions business was focused on the PC portions of the market for microprocessors.³⁵

A. OVERVIEW OF MICROPROCESSORS

21. A microprocessor serves as the Central Processing Unit (“CPU”), or computational engine, of every computer, including desktop and notebook PCs, servers, and mobile devices.³⁶ There are two primary types of microprocessor architecture: x86 and ARM.³⁷ The key difference between these two types of architectures is that one (x86) features a “complex” set of instructions and the other (ARM) utilizes a “reduced” set of instructions.

22. Complex Instruction Set Computer (“CISC”) processors, such as the x86, were first developed by Intel Corporation (“Intel”)³⁸ and allow for complex tasks to be executed with single instructions.³⁹ In contrast, Reduced Instruction Set Computer (“RISC”) processors, such as ARM-

Continued from previous page

tablets.”). Although this statement includes “tablets,” AMD’s sales of Z-Series APUs, its semiconductor series for tablets, made up only \$3.0 million of AMD’s total sales of \$6,244 million (less than one percent) in 2011-2012. *See* Figure 6 in this report. *See also*, AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 5 (“Our APUs for mobile PC platforms consist of our performance, mainstream AMD A-Series APU, the AMD E-Series APU for everyday performance, the AMD C-Series APU for HD internet experiences in small form factors, and the AMD Z-Series APU for Windows-based tablets.”).

³⁵ AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 24 (“Currently, approximately 85% of our business is focused on the legacy PC portions of the market, projected to have slowing growth over the next several years.”).

³⁶ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 3 (“A microprocessor is an IC [integrated circuit] that serves as the central processing unit, or CPU, of a computer.”).

³⁷ Gold, Jack, “Can ARM hold the mobile advantage over Intel’s x86 architecture?” *Computerworld*, June 25, 2013 (“Intel has announced its next generation of x86-based Core chips (Haswell) and new Atom architecture (Silvermont). Many question whether Intel can truly compete with the myriad of ARM-based designs now powering the vast majority of mobile devices from ARM licensees such as Qualcomm, Nvidia, Samsung, etc.”).

³⁸ Kulkarni, Manish, “Complex Instruction Set Computer (CISC),” *Auburn University*, April 28, 2008, p. 4 (“Generation: 1 (IA-16); First Introduced: 1978; Prominent Consumer CPU brands: Intel 8086, Intel 8088”).

³⁹ Kulkarni, Manish, “Complex Instruction Set Computer (CISC),” *Auburn University*, April 28, 2008, p. 3 (“Definition: Pronounced ‘sisk’ and standing for Complex Instruction Set Computer, is a Microprocessor Architecture that aims at achieving complex operations with single instructions and favors the richness of

Continued on next page

based microprocessors, were first developed by IBM,⁴⁰ and use more general-purpose instructions that can be executed by a fewer amount of cycles.⁴¹ The advantage of x86-based microprocessors is that they can perform complex operations required by high-performance computing.⁴² ARM-based microprocessors, on the other hand, are more power-efficient.⁴³

23. During the Class Period, x86-based microprocessors were often used in desktops and laptops, while ARM-based microprocessors were commonly used in tablets and smartphones.⁴⁴ During the Class Period, AMD's microprocessors and chipsets were all based on x86 architecture.⁴⁵

Continued from previous page

the instruction set (typically as many as 200 unique instructions) over the speed with which individual instructions are executed.”).

⁴⁰ Oklobdzija, Vojin G., “Reduced Instruction Set Computers,” *Technical Paper, University of California*, Fall 1999, p. 3 (“RISC architecture has been developed as a result of the 801 project which started in 1975 at the IBM T.J. Watson Research Center and was completed by the early 1980s.”).

⁴¹ Oklobdzija, Vojin G., “Reduced Instruction Set Computers,” *Technical Paper, University of California*, Fall 1999, p. 3 (“Therefore RISC architecture starts with a small set of most frequently used instructions which determines the pipeline structure of the machine enabling fast execution of those instructions in one cycle.”); p. 4 (“The work that each instruction of the RISC machine performs is simple and straight forward. Thus, the time required to execute each instruction can be shortened and the number of cycles reduced.”).

⁴² “Tablet Demand and Disruption: Mobile Users Come of Age,” *Morgan Stanley*, February 14, 2011 [AMD-021-002262923], p. 30 (“First, should tablet usage evolve towards content-creation activities – e.g., creating and editing files and documents – performance becomes more important and x86 becomes more competitive, in our view...As it stands today, ARM wears the low-power consumption crown, while x86 is the performance leader.”).

⁴³ “Tablet Demand and Disruption: Mobile Users Come of Age,” *Morgan Stanley*, February 14, 2011 [AMD-021-002262923], p. 30 (“As it stands today, ARM wears the low-power consumption crown, while x86 is the performance leader...ARM currently wins out over x86 in the power-consumption battle. Apple's ARM-based iPad set a high bar for power consumption, with 10 hours of battery life.”).

⁴⁴ “Tablet Demand and Disruption: Mobile Users Come of Age,” *Morgan Stanley*, February 14, 2011 [AMD-021-002262923], p. 29 (“Today, ARM dominates in key mobile device segments like smartphones and tablets, while x86 dominates in traditional computing environments such as servers and PCs.”).

⁴⁵ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 4 (“We currently base our microprocessors and chipsets on the x86 instruction set architecture and AMD's Direct Connect Architecture, which connects an on-chip memory controller and input/output, or I/O, channels directly to one or more microprocessor cores.”).

B. AMD’S MICROPROCESSOR SUPPLY CHAIN

24. AMD serves as an intermediary in the supply chain in the production of PCs and other electronic devices.⁴⁶ The firm purchases inputs from suppliers “upstream” in the supply chain,⁴⁷ and sell microprocessors to customers “downstream” in the supply chain.⁴⁸

1. AMD’s Upstream Supply Chain: Suppliers to AMD

25. The primary input to a microprocessor is its wafer.⁴⁹ During this period, Intel was known as an integrated device manufacturer (“IDM”) because it fabricated the wafers in-house,⁵⁰ while AMD was “fabless”⁵¹ because it outsourced its wafer manufacturing to third party fabrication plants (or “fabs”).⁵²

⁴⁶ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 4 (“We currently design, develop and sell microprocessor products for servers, desktop PCs and mobile devices, including mobile PCs and tablets.”).

⁴⁷ *See, e.g.*, AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 20 (“We rely on third-party wafer foundries to fabricate the silicon wafers for all of our products.”).

⁴⁸ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 4 (“We currently design, develop and sell microprocessor products for servers, desktop PCs and mobile devices, including mobile PCs and tablets.”).

⁴⁹ “From Sand to Silicon ‘Making of a Chip’ Illustrations,” Intel, May 2009, pp. 3-4. The illustrations demonstrate how wafers are the first and primary input into the microprocessor manufacturing process. Wafers are sliced from mono-crystal Silicon ingots.

⁵⁰ Intel, 2011 Form 10-K, February 23, 2012, p. 1 (“Additionally, we aim to have the best process technology, and unlike most semiconductor companies, we primarily manufacture our products in our own facilities.”).

⁵¹ Deposition of Michael A. Massetti, July 1, 2016, p. 78:5-23 (“Q. What is IDM? A. Integrated device manufacturer, which implies that they had semiconductor wafer fab facilities in their corporate enterprise. Q. So they would manufacture wafers in-house; is that correct? A. Correct. Q. And...an IDM is contrasted here with a fabless company, right? A. Correct. Q. Fabless would mean that they did not have that capability in-house? A. Correct...A. May of 2011, AMD was already fabless.”).

⁵² AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 20 (“We rely on third-party wafer foundries to fabricate the silicon wafers for all of our products.”).

26. For many years, AMD (like Intel) was an IDM and manufactured its wafers in-house.⁵³ However, in 2009, AMD spun its fab off into a joint-venture among AMD, West Coast Hitech L.P., and Advanced Technology Investment Co. (“ATIC”).⁵⁴ The joint venture was named The Foundry Company, which later became known as GlobalFoundries. GlobalFoundries operated its foundry⁵⁵ independently from AMD⁵⁶ and also served other customers.⁵⁷ AMD subsequently decreased its equity ownership of GlobalFoundries, as shown in Figure 1, leading to even greater independence between the two entities. On December 27, 2010, AMD’s ownership interest in GlobalFoundries went from 23 to 14 percent on a fully diluted basis and from 34 to 18 percent on a voting basis.⁵⁸ Following that, in September 2011, AMD’s ownership in GlobalFoundries on a fully diluted basis fell below 10 percent, triggering the loss of a designated representative to the

⁵³ Lemon, Sumner, “AMD’s Manufacturing Spinoff Renamed GlobalFoundries,” *PCWorld*, March 3, 2009, (“Advanced Micro Devices’ former manufacturing arm was renamed GlobalFoundries on Wednesday as the newly created company began operating independently. Formerly called The Foundry Co., GlobalFoundries was spun off from AMD as a joint venture with Advanced Technology Investment Co. (ATIC), an investment fund controlled by the Abu Dhabi government.”).

⁵⁴ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 13 (“On March 2, 2009, together with Advanced Technology Investment Company LLC (ATIC) and West Coast Hitech L.P., (WCH), acting through its general partner, West Coast Hitech G.P., Ltd., we formed GLOBALFOUNDRIES, Inc. (GF), a manufacturing joint venture that manufactures semiconductor products and provides certain foundry services to us.”).

⁵⁵ A “foundry” in this context is a semiconductor manufacturing plant.

⁵⁶ Lemon, Sumner, “AMD’s Manufacturing Spinoff Renamed GlobalFoundries,” *PCWorld*, March 3, 2009, (“Advanced Micro Devices’ former manufacturing arm was renamed GlobalFoundries on Wednesday as the newly created company began operating independently.”)

⁵⁷ “Daily Chip Clips,” *Oppenheimer*, August 31, 2011 [AMD-021-002270000], p. 2 (“The company [GlobalFoundries] has 150 customers including its former owner Advanced Micro Devices and customers of Chartered Semiconductor it acquired in 2009.”).

⁵⁸ AMD, 2010 Annual Report on Form 10-K, February 18, 2011, pp. 44-45 (“On December 27, 2010, ATIC International Investment Company LLC, an affiliate of ATIC, contributed all of the outstanding Ordinary Shares of GLOBALFOUNDRIES Singapore Pte. Ltd., a private limited company organized in Singapore (formerly Chartered), to GF in exchange for 2,808,981 newly issued Class A Preferred Shares...The issuance of Class A Preferred Shares to ATIC International diluted our ownership interest in GF from 23% to 14% on a fully converted to GF Ordinary Shares basis and from 34% to 18% on a voting basis.”).

GlobalFoundries board of directors in September 2013.⁵⁹ On March 4, 2012, AMD divested its stake in GlobalFoundries entirely.⁶⁰

Figure 1
Global Foundries Spin-Off Timeline

Date	Event	AMD's Ownership in GF		AMD-Designated GF Board Directors
		Diluted Basis	Voting Basis	
3/2/2009	AMD spins off GF in a joint venture between AMD, ATIC, and WCH.	23.0%	34.0%	4
12/27/2010	GF acquires Chartered Semiconductor Manufacturing Ltd., former subsidiary of ATIC. Class A preferred shares issued to ATIC dilute AMD's ownership.	14.0%	18.0%	2
10/1/2011	AMD's ownership in GF falls below the minimum 10% required to designate a GF Board Director after the following two years (September 2013).	9.6%	11.2%	1
3/4/2012	AMD transfers remaining ownership in GF to GF.	0.0%	0.0%	0

Source: AMD, 2009 Annual Report on Form 10-K, February 19, 2010; AMD, 2010 Annual Report on Form 10-K, February 18, 2011; AMD, 2011 Annual Report on Form 10-K, February 24, 2012; AMD, 2012 Annual Report on Form 10-K, February 21, 2013; AMD, Form 10-Q, November 9, 2011.

27. After the spin-off, GlobalFoundries continued to be responsible for the manufacture of a majority of AMD's product lines, including its Llano products.⁶¹ GlobalFoundries was also a contract manufacturer for other "fabless" semiconductor companies.⁶²

⁵⁹ AMD, Form 10-Q, November 9, 2011, p. 6 ("Subject to certain exceptions set forth in the Amended and Restated Shareholders' Agreement, the Company currently has the right to designate one representative to the GF board of directors, and this right continues for two years following the date on which the Company's ownership in GF, on a fully diluted basis, falls below 10%. Because the Company's ownership in GF, on a fully diluted basis, fell below 10% in September 2011, as of September 2013, the Company will lose the right to designate one representative to the GF board of directors.").

⁶⁰ AMD, Form 8-K, March 4, 2012, p. 2 ("[W]e agreed to pay GF \$425 million and transfer to GF all of the capital stock of GF that we own, directly or indirectly, constituting 1,063,798 GF Class A Preferred Shares...As a result of the transfer of our shares of GF capital stock, we are no longer an owner of GF or a partner of GF for tax purposes. Also, we are no longer entitled to designate a director on GF's board, and our designated director resigned effective as of the date of the second amendment.").

⁶¹ Deposition of John Docherty, July 22, 2016, p. 32:5-15 ("Q. Okay. And we talked a little bit earlier about Llano. What is your understanding of that term? A. Llano was a product that was...designed and

Continued on next page

28. During the Class Period, AMD also engaged Taiwan Semiconductor Manufacturing Company Limited (“TSMC”) as an alternative foundry supplier.⁶³ As discussed in further detail below, GlobalFoundries was the exclusive manufacturer of AMD’s products using 32-nm and 45-nm manufacturing processes, including AMD’s Llano APUs.⁶⁴ TSMC manufactured AMD products using 40-nm and 55-nm processes, including AMD’s Brazos APUs.⁶⁵ AMD relied on both GlobalFoundries and TSMC to manufacture products using the 28-nm manufacturing process.⁶⁶

Continued from previous page

manufactured by AMD and GlobalFoundries...designed by AMD to be brought up in the Dresden fab, the spinoff.”).

⁶² “Daily Chip Clips,” *Oppenheimer*, August 31, 2011 [AMD-021-002270000], p. 2 (“[GlobalFoundries] has 150 customers including its former owner Advanced Micro Devices and customers of Chartered Semiconductor it acquired in 2009.”).

⁶³ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 14 (“We also have foundry arrangements with Taiwan Semiconductor Manufacturing Company (TSMC) for the production of certain graphics processors and chipsets, embedded processors, and APU products.”).

⁶⁴ Deposition of John Docherty, July 22, 2016, p. 32:5-20 (“Q. Okay. And we talked a little bit earlier about Llano. What is your understanding of that term? A. Llano was a product that was...designed and manufactured by AMD and GlobalFoundries...designed by AMD to be brought up in the Dresden fab, the spinoff...Q. Llano’s a 32-nanometer product? A. Correct.”); AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 14 (“GF manufactures our microprocessors on 300 millimeter wafers using primary 45nm and 32nm process technology.”).

⁶⁵ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 14 (“We are in production in TSMC’s 300 millimeter and 200 millimeter fabrication facilities in technologies ranging from 65nm to 28nm.”); “Supply Chain Status – WW27/28,” AMD, July 13, 2011 [AMD-003-000436258], p. 14 (“TSMC 40nm Wafer Plan, TSMC 55nm Wafer Plan”).

⁶⁶ “It’s All About Yields,” *Citi*, March 5, 2012 [AMD-021-002251973], p. 1 (“As part of the WSA, AMD is foregoing its ownership stake in Global Foundries valued at \$278 M. By doing so, AMD extricates itself from an exclusivity arrangement with Global Foundries, noting that AMD will move to bulk silicon at 28nm (from SOI). This paves the way for AMD to work with TSMC; Citi’s Foundry Analyst notes that AMD is expected to be one of TSMC’s larger 28nm customers. As a reminder, TSMC is already in production at 28nm and our discussions with 28nm customers suggest yields and progressing well. AMD will also work with Global Foundries at 28nm, but we believe progress will not begin until 3Q12 at the earliest.”); “Broadly inline 1Q and 2Q11 Guide,” *Barclays Capital*, April 25, 2011 [AMD-021-002246706], p. 3 (“Looking further ahead, management highlighted that it will be taping out 28nm for next generation APU offerings later in the year. AMD will be using both Globalfoundries and TSMC as their foundry partners although the specifics as to the mix have not been outlined. We do note that there is nothing in the supply agreement which would preclude AMD from increasing its mix to TSMC.”).

2. AMD's Downstream Supply Chain: AMD's Customers

29. Microprocessor firms sell their products primarily to two different types of customers: original equipment manufacturers (“OEMs”)⁶⁷ and third-party distributor, or channel, customers.⁶⁸ AMD also referred to OEMs as multinational corporation (“MNC”) customers.⁶⁹

30. OEMs purchased AMD's microprocessor products to incorporate into other products, such as desktop and mobile PCs. For example, HP purchased Llano chips from AMD to incorporate into its PC products that it then sold to consumers and businesses.

31. There are three levels of “channel” customers: direct customers, channel distributors, and resellers. During the Class Period, AMD had approximately 58 direct microprocessor customers⁷⁰ along with over 700 global channel distributors and thousands of resellers.⁷¹ AMD's direct customers included original design manufacturers (“ODMs”), graphics customers (“Add-In

⁶⁷ Deposition of Darren Grasby, June 22, 2016, p. 20:11-22 (“Q. All right. So during that period, did AMD sell its products to OEMs?...A. Yes, they did, yeah. Q. And OEMs are original equipment manufacturers, correct? A. Yes. If you're referring to an OEM as an HP, Lenovo, Dell, then yes, correct.”).

⁶⁸ Deposition of Darren Grasby, June 22, 2016, p. 21:1-22 (“Q. And during this period, AMD obviously sold its products to the channel? A. Yes. Q. Can you explain just generally what is the channel? A...we were dealing with probably 50 to 60 direct customers, but then, you know, the actual channels in countries across the globe, you're talking 700 customers...And then below that...you've got tens of thousands of small resellers' and moms' and pops' system integrators on the corner of 6th Street, for example, that would be a channel customer. Q. Okay. And just so I understand how the process works, you know, AMD has a product or a chip, does that go to one of these 50 to 60 direct customers who distribute it to one of the 700 who distribute it to a mom and pop...? A. That's exactly it.”).

⁶⁹ Deposition of Darren Grasby, June 22, 2016, p. 20:19-25 (“Q. And OEMs are original equipment manufacturers, correct? A. Yes. If you're referring to an OEM as an HP, Lenovo, Dell, then yes, correct. Q. Yes. And AMD also refers to these as MNCs; is that right? A. That's correct.”).

⁷⁰ AMD sales data [AMD-028-002325474]. Count excludes “Disti General (For Credit Only)” and “Not Assigned.”

⁷¹ Deposition of Darren Grasby, June 22, 2016, p. 21:4-16 (“Q. Can you explain just generally what is the channel? A...we were dealing with probably 50 to 60 direct customers, but then, you know, the actual channels in countries across the globe, you're talking 700 customers...And then below that...you've got tens of thousands of small resellers' and moms' and pops' system integrators on the corner of 6th Street, for example, that would be a channel customer.”).

Board” manufacturers or “AIBs”), and master distribution partners.⁷² ODMs manufactured motherboards using microprocessor products, AIBs manufactured graphics boards, and master distributors received the microprocessors from AMD to distribute as-is.⁷³ These component parts were then transferred along in the supply chain to channel distributors, resellers, or consumers.⁷⁴ For example, a master distributor could have purchased Llano chips from AMD to sell to a computer parts store that incorporated the chips into PCs to sell to consumers, or sold the chips directly to enthusiasts who built their own PCs.

32. During 2011-2012, AMD sold microprocessor products to 74 OEMs and 58 channel customers.⁷⁵ In 2011 and 2012, OEM and channel sales made up 57 percent and 43 percent of AMD’s total microprocessor revenues, respectively.⁷⁶ Figure 2 below shows AMD’s ten largest OEM and channel customers by total microprocessor revenues in the period 2011-2012.

⁷² Deposition of Darren Grasby, June 22, 2016, p. 27:10–12 (“A. ...our three direct customers would have been the ODMs, AIBs which are our graphics customers, and our master distribution partners.”).

⁷³ Deposition of Darren Grasby, June 22, 2016, p. 26:13-19 (“Q. Okay. What about an ODM or what we understand to be an original design manufacturer, is that what ODM means to you?... A. It’s a motherboard manufacturer for me that they classified as an ODM...”); p. 27:16-21 (“Q. Okay. So within those three, let’s start with the AIBs, what did the AIBs do? A. We sell them graphic silicon, and they then manufacture the finished graphics board and then distribute it across 700 customers I was referring to earlier.”); pp. 29:20–30:15 (“Q. ...the master distributors would be getting the graphics board from the AIB? A. Potentially. Q. Potentially. And then they would be getting the CPU? A. From us. Q. From you. And then the chipset from? A. The ODMs...And then, obviously, at the point of the master disti then selling the CPU into the country, it goes on the motherboard, onto the socket.”); p. 30:7-13 (“Q. All right. And so what about... the motherboard manufacturers? You mentioned that they’re part of the 50 to 60 channel customers. What’s their role in all of this? A. Well...we sell them a chipset and they manufacture the motherboard. They take the motherboard to the country.”).

⁷⁴ Deposition of Darren Grasby, June 22, 2016, pp. 30:16–31:1 (“Q... who puts the chip into the motherboard socket? A. It could be any one of the customers. It could be, you know, it could be an end user. It could be someone like yourself buying from Newegg, where you buy the processor and you buy the motherboard...and you put the two together in your house. It could be a system integrator in-country. It could be a moms’ and pops’ computer store on the corner of 6th Street.”).

⁷⁵ AMD sales data [AMD-028-002325474]. Count excludes “Disti General (For Credit Only)” and “Not Assigned.”

⁷⁶ AMD sales data [AMD-028-002325474].

Figure 2
AMD Microprocessor Sales by Largest OEM and Channel Customers
2011 – 2012



33. Figure 3 below shows that while AMD made sales around the world,⁷⁷ most of its microprocessor sales – 73 percent and 48 percent of OEM and channel sales, respectively – were to customers in Greater China, which was comprised of China, Hong Kong, and Taiwan.⁷⁸ Europe-Middle East-Africa (“EMEA”) and Asia-Pacific (“APAC”)⁷⁹ were the second and third largest markets, accounting for 14 percent and 13 percent of total microprocessor sales, respectively.⁸⁰

34. Figure 3 also shows the breakdown of AMD’s sales by market segment (desktop or mobile). While “mobile” in Figure 3 refers to both PCs and handheld devices, AMD’s sales for mobile devices were almost entirely for mobile, or notebook, PCs.⁸¹ As reflected in Figure 3, most of AMD’s sales to OEM customers were of microprocessors for mobile PCs and substantially all of AMD’s sales to channel customers were of microprocessors for desktop PCs.⁸²

⁷⁷ Counsel has advised me that the regions reported in AMD’s sales data correspond to the region the product was shipped to.

⁷⁸ See “AOP_Activities,” AMD, October 10, 2012 [AMD-016-001939718], “Merit Summary” sheet.

⁷⁹ See “AOP_Activities,” AMD, October 10, 2012 [AMD-016-001939718], “Merit Summary” sheet.

⁸⁰ AMD sales data [AMD-028-002325474].

⁸¹ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 4 (“We currently design, develop and sell microprocessor products for servers, desktop PCs and mobile devices, including mobile PCs and tablets.”). Although this statement includes “tablets,” AMD’s sales of Z-Series APUs, its semiconductor series for tablets, made up only \$3.0 million of AMD’s total sales of \$6,244 million (less than one percent) in 2011-2012. See Figure 6 in this report. See also, AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 5 (“Our APUs for mobile PC platforms consist of our performance, mainstream AMD A-Series APU, the AMD E-Series APU for everyday performance, the AMD C-Series APU for HD internet experiences in small form factors, and the AMD Z-Series APU for Windows-based tablets.”).

⁸² AMD sales data [AMD-028-002325474].

Figure 3
AMD Microprocessor Sales by Customer Type, Market Segment, and Region
2011 – 2012
(\$ in thousands)

OEM	Desktop	Mobile	% Desktop	% Mobile	Region % of OEM Total	Region % of Total
Asia-Pacific	\$142,518	\$337,569	30%	70%	13%	8%
Europe-Middle East-Africa	\$115,544	\$47,542	71%	29%	5%	3%
Greater China	\$563,154	\$2,023,213	22%	78%	73%	41%
Latin America	\$62,151	\$43,998	59%	41%	3%	2%
North America	\$230,728	\$5,047	98%	2%	7%	4%
Not assigned	-\$5,191	-\$2,131	71%	29%	0%	0%
Total OEM	\$1,108,904	\$2,455,238	31%	69%	100%	57%

Channel	Desktop	Mobile	% Desktop	% Mobile	Region % of Channel Total	Region % of Total
Asia-Pacific	\$286,977	\$7,036	98%	2%	11%	5%
Europe-Middle East-Africa	\$712,885	-\$858	100%	0%	27%	11%
Greater China	\$1,277,040	-\$790	100%	0%	48%	20%
Latin America	\$203,603	\$4,332	98%	2%	8%	3%
North America	\$322,470	-\$2,171	101%	-1%	12%	5%
Not assigned	-\$130,227	-\$48	100%	0%	-5%	-2%
Total Channel	\$2,672,749	\$7,501	100%	0%	100%	43%
Total OEM and Channel	\$3,781,653	\$2,462,738	61%	39%		100%

Sources: AMD sales data [AMD-028-002325474].

Notes: Sales to a customer with region labeled "Not assigned" were assigned to regions, where possible, proportionately to the customer's overall regional distribution of sales in 2011-2012. Negative sales values indicate that there were net returns or refunds for the period.

C. AMD'S FUSION INITIATIVE

35. An "Accelerated Processing Unit" or "APU," as coined by AMD,⁸³ combines a CPU and a Graphics Processing Unit ("GPU") on one single piece of silicon.⁸⁴ GPUs are specialized chips designed primarily for high performance computer graphics and image processing.⁸⁵ They are used in desktop and mobile PCs, professional workstations, servers, and game consoles.⁸⁶

36. In January 2011, AMD launched⁸⁷ its first "Fusion" APUs, starting with the "Brazos" product family.⁸⁸ AMD also began shipping chips in the "Llano" family in late Q1 2011,⁸⁹ and launched its third fusion product, "Trinity", in Q2 2012.⁹⁰

⁸³ Nicol, Will, "What's an APU, and Should You Buy One for Your PC?" *Digital Trends*, July 10, 2015 ("If you pay passing attention to computer news, you may have noticed in recent years that semiconductor giant AMD has been heavily pushing the term 'APU.'").

⁸⁴ AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 4 ("Our AMD Accelerated Processing Unit, or APU, combines our CPU and GPU onto a single piece of silicon.").

⁸⁵ AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 7 ("[D]iscrete GPUs are specifically architected for high performance graphics processing.").

⁸⁶ AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 7 ("We develop our products for use in desktop and mobile PCs, professional workstations, servers and gaming consoles.").

⁸⁷ In this report, a chip "launch" date refers to the date when AMD formally announced the launch of its products, which often occurred after some chips had already shipped to customers for revenue.

⁸⁸ "AMD Fusion APU Era Begins," AMD, Press Release, January 4, 2011 ("Today at the Consumer Electronics Show, AMD (NYSE:AMD) launched a new class of accelerated processor that combined more compute capabilities than any processor in the history of computing. The AMD Fusion Family of Accelerated Processing Units (APUs) incorporate – in a single die design – a multi-core CPU (x86) technology, a powerful DirectX11-capable discrete-level graphics and parallel processing engine, a dedicated high-definition video acceleration block, and a high-speed bus that speeds data across the differing types of processor cores within the design...The 2011 low power platform (formerly codenamed 'Brazos') enhances the everyday computing experience and is available beginning today in two APU variations: E-Series and C-Series.").

⁸⁹ AMD, Form 8-K, April 21, 2011, p. 2 ("AMD commenced revenue shipments of AMD's first Fusion APU for mainstream notebooks (codenamed 'Llano') that combines discrete-class graphics capabilities, personal supercomputing performance and AMD AllDay power."); "AMD Reports First Quarter 2011 Results – CFO Commentary," AMD, Press Release, April 21, 2011, p. 2 ("APU platforms are gaining transaction in the market as evidenced by a faster than anticipated ramp as unit shipments tripled over the prior quarter. Adding to this momentum, we started shipping Llano, our high-end APU, late in the first quarter of 2011."). Llano officially launched in June 2011; See "AMD Ushers in Next Generation of Computing with AMD A-Series APUs," AMD, Press Release, June 14, 2011.

37. Figure 4 shows AMD's sales of Brazos, Llano, and Trinity chips in 2011-2012. Figure 4 indicates that AMD sold Brazos almost exclusively to OEMs primarily for the mobile PC market, whereas Llano sales were both to OEMs (mostly for mobile PCs) and to the channel (overwhelmingly for desktop PCs).

Figure 4
APU Purchases by Market Segment
2011-2012
(\$ thousands)

OEM	Desktop	Mobile	Total	% Desktop	% Mobile
	[1]	[2]	[3]	[4]	[5]
Brazos	\$140,734	\$992,869	\$1,133,603	12.4%	87.6%
Llano	\$176,617	\$689,067	\$865,685	20.4%	79.6%
Trinity	\$73,677	\$493,636	\$567,314	13.0%	87.0%
Total OEM	\$391,029	\$2,175,573	\$2,566,602	15.2%	84.8%
Channel	Desktop	Mobile	Total	% Desktop	% Mobile
Brazos	\$7,255	\$5,119	\$12,374	58.6%	41.4%
Llano	\$499,358	-\$111	\$499,247	100.0%	0.0%
Trinity	\$45,412	\$157	\$45,568	99.7%	0.3%
Total Channel	\$552,025	\$5,164	\$557,189	99.1%	0.9%
Total OEM and Channel	\$943,053	\$2,180,737	\$3,123,791	30.2%	69.8%

Sources: AMD sales data [AMD-028-002325474].

Notes:

[1]: Total APU desktop sales, 2011-2012.

[2]: Total APU mobile sales, 2011-2012.

[3]: [1] + [2].

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⁹⁰ "Second-Generation AMD A-Series APUs Enable Best-in-Class PC Mobility, Entertainment, and Gaming Experience in Single Chip," AMD, Press Release, May 15, 2012 ("AMD (NYSE:AMD) today announced the widely anticipated launch of its 2nd-Generation AMD A-Series Accelerated Processing Units (APUs) for mainstream and ultrathin notebooks, All-in-One and traditional desktops, home theater PCs and embedded designs. The 2nd-Generation A-Series APU, codenamed 'Trinity', is a grounds-up improved design over the previous generation, enabling a best-in-class PC mobility, entertainment, and gaming experience.").

[4]: [1] ÷ [3].

[5]: [2] ÷ [3].

Net negative Channel Mobile Llano indicates that there were net returns or refunds in the period.

38. AMD marketed Brazos as a low-power platform for notebooks, netbooks, all-in-ones, and small form factor desktops, and the emerging form factors market.⁹¹ Early in 2012, AMD discussed the Brazos product:

The tremendous success of our low power Brazos platform drove a 25% increase in mobile processor shipments and significant notebook share gains for the year. Brazos is, in fact, the most successful platform in our AMD history.⁹²

39. While AMD marketed Brazos at the lower end of the notebook PC market,⁹³ AMD marketed Llano to the mid-tier PC market⁹⁴ for both desktops and notebooks.⁹⁵ AMD described Llano as follows:

[I]t is very simply the most impressive processor in history. Featuring a modern graphics architecture, Llano gives mainstream PC users something they've never had before – a brilliant visual experience, coupled with all-day battery life. It delivers a better end-user experience than anything else on the market...⁹⁶

⁹¹ “AMD Fusion APU Era Begins,” AMD, Press Release, January 4, 2011 (“The 2011 low power platform (formerly codenamed ‘Brazos’) enhances the everyday computing experience and is available beginning today in two APU variations: E-Series and C-Series...E-Series (former codename: ‘Zacate’) Designed for mainstream notebooks, All-in-Ones, and small form factor desktops. C-Series (former codename: ‘Ontario’) Designed for HD netbooks and other emerging form factors.”).

⁹² AMD, Q4 2011 Earnings Conference Call (Rory Read), January 24, 2012, p. 2.

⁹³ “Broadly inline 1Q and 2Q11 Guide,” *Barclays Capital*, April 25, 2011 [AMD-021-002246706], p. 3 (“While Intel saw ASPs up close to 10% in 1Q AMD was not able to benefit from the same up-sell opportunity as its brazos platform mainly targets the lower end of the PC market and netbooks.”); Deposition of Thomas Seifert, August 11, 2016, p. 31:16-17 (“[T]he Brazos product was optimized for low-end notebooks...”).

⁹⁴ “AMD: Valuation Requires Disruptive Product Cycle – Not Likely,” *Raymond James*, April 25, 2011 [AMD-021-002270517], p. 2 (“We suspect, based on history, that ceding a couple of quarters to Intel in the market comes at the expense of ASPs; however, we do believe Llano will fill in the void in the mid-tier of the processor market and allow AMD to continue to enjoy its 18-20% overall market share unit-wise.”).

⁹⁵ Deposition of Thomas Seifert, August 11, 2016, p. 32:3-5 (“Q. Which one was selling – which one was designed to be sold at a higher price point? A. ASPs for Llano were higher than for Brazos.”). See Figure 4.

⁹⁶ AMD, Q1 2011 Earnings Conference Call (Thomas Seifert), April 21, 2011, p. 3.

40. Some industry observers agreed with AMD, describing Llano's superior graphics performance as a "major breakthrough" for chips, reducing a previous tradeoff between graphics performance and mobility.⁹⁷ The chip was more energy efficient than predecessors, enhancing battery life for products like notebooks.⁹⁸

D. OTHER FIRMS IN THE MICROPROCESSOR INDUSTRY

1. Intel Corporation

41. Intel designs and manufactures "advanced integrated digital technology platforms."⁹⁹ These platforms include a microprocessor and chipset and can also include hardware, software, and services components.¹⁰⁰ The firm's products include platforms that are used in PCs, data centers, tablets, and smartphones, among other devices.¹⁰¹ As discussed above, Intel primarily manufactures its microprocessor products in its own facilities.¹⁰² In addition to microprocessors, Intel sells hardware-based security technology, McAfee software and security products, and phone components and platforms.¹⁰³

⁹⁷ Pinola, Melanie, "Why AMD's New Llano Processor is a Big Deal," *PC World*, April 6, 2011 ("Fusion chips, already found in \$200 laptops and desktops, are considered by analysts to have better graphics performance than Intel's chips. This is a major breakthrough for laptop users, as most of us have had to put up with middling graphics performance from earlier integrated graphics processors in exchange for greater mobility.").

⁹⁸ Pinola, Melanie, "Why AMD's New Llano Processor is a Big Deal," *PC World*, April 6, 2011 ("The new processors also are more energy efficient, helping to preserve much-needed battery life on notebooks.").

⁹⁹ Intel, 2011 Form 10-K, February 23, 2012, p. 1 ("We design and manufacture advanced integrated digital technology platforms.").

¹⁰⁰ Intel, 2011 Form 10-K, February 23, 2012, p. 1 ("A platform consists of a microprocessor and chipset, and may be enhanced by additional hardware, software, and services.").

¹⁰¹ Intel, 2011 Form 10-K, February 23, 2012, p. 1 ("Our platforms are used in a wide range of applications, such as PCs (including Ultrabook systems), data centers, tablets, smartphones, automobiles, automated factory systems, and medical devices.").

¹⁰² Intel, 2011 Form 10-K, February 23, 2012, p. 1 ("Additionally, we aim to have the best process technology, and unlike most semiconductor companies, we primarily manufacture our products in our own facilities.").

¹⁰³ Intel, 2012 Annual Report, February 19, 2013, pp. 3-5 ("We also offer features designed to improve our platform capabilities. For example, we offer Intel vPro technology, a computer hardware-based security technology for the notebook and desktop market segments...In 2011, we acquired McAfee, Inc. with the

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42. In 2011 and 2012, Intel's largest segment, the PC Client Group, made up 66 percent and 64 percent, respectively, of the company's overall sales, followed by the Data Center Group at 19 percent to 20 percent, respectively.¹⁰⁴ Intel's PC Client Group segment offered products "incorporated into notebook platforms (including Ultrabook systems), and desktop computers for consumers and businesses," while the Data Center Group segment offered "products that provide[d] leading performance, energy efficiency, visualization technology for server, workstation, and storage platforms" as well as additional computing services.¹⁰⁵ Intel's customers included OEMs, ODMs, and other manufacturers in the computing and communications industries.¹⁰⁶

43. During the Class Period, Intel and AMD were the only two significant producers of x86 microprocessors designed for the notebook and desktop PC markets.¹⁰⁷ Intel's competing products during 2011 and 2012 included its Sandy Bridge and Ivy Bridge microprocessors.¹⁰⁸

Continued from previous page

objective of improving the overall security of our platforms...McAfee's products include software solutions for end-point security, network and content security, risk and compliance, and consumer and mobile security...In addition to our Intel Atom processor-based products for the smartphone market segment, we offer components and platforms for mobile phones and connected devices. Our acquisition of the Wireless Solutions (WLS) business of Infineon Technologies AG in 2011 has enabled us to offer a variety of mobile phone components, including baseband processors, radio frequency transceivers, and power management integrated circuits.").

¹⁰⁴ Intel, 2011 Form 10-K, February 23, 2012, p. 5; Intel, 2012 Annual Report, February 19, 2013, p. 7.

¹⁰⁵ Intel, 2011 Form 10-K, February 23, 2012, p. 4 ("Our PC Client Group operating segment offers products that are incorporated into notebook platforms (including Ultrabook systems), and desktop computers for consumers and businesses...Our Data Center Group operating segment offers products that provide leading performance, energy efficiency, and virtualization technology for server, workstation, and storage platforms. We are also increasing our focus on products designed for high-performance and mission-critical computing, cloud computing services, and emerging markets.").

¹⁰⁶ Intel, 2011 Form 10-K, February 23, 2012, p. 1 ("We sell these platforms primarily to original equipment manufacturers (OEMs), original design manufacturers (ODMs), and industrial and communications equipment manufacturers in the computing and communications industries.").

¹⁰⁷ Intel, 2011 Form 10-K, February 23, 2012, p. 6 ("For many years, Advanced Micro Devices, Inc. (AMD) has been our primary competitor in the market segments for platforms used in notebooks and desktops.").

¹⁰⁸ Deposition of Darren Grasby, June 22, 2016, pp. 65:5-66:1 ("Q. What is Sandy Bridge? A. It's an Intel processor... Q. Was Sandy Bridge a competitor to the Llano chip? A. Of course. I mean, it's an Intel. It's an Intel chip, so it's a competitor to us. Q. I just mean if it – was it a contemporary of the Llano chip? A.

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2. Nvidia Corporation

44. During the Class Period, Nvidia's primary business was creating graphics processing units (GPUs) for PCs and mobile processors that incorporated both CPU and GPU technologies.¹⁰⁹ The company's reporting segments included the GPU business and Tegra processor business.¹¹⁰ The GPU products included chips for desktop and notebook PCs, streaming and graphics-intensive design applications, and various workstations, as well as processors centered around visual and multimedia applications on tablets, smartphones, and other devices.¹¹¹ The GPU business was Nvidia's most dominant segment making up 64 percent and 76 percent of Nvidia's sales in fiscal years 2011 and 2012, respectively.¹¹²

45. Nvidia's target markets included gaming, enterprise, mobile, and cloud customers that purchased the firm's GRID visual computing appliance.¹¹³ Nvidia's primary customers included

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Yes... Q. And – and what's Ivy Bridge? A. The same again; it's an Intel piece of silicon, so it's an Intel CPU. Q. Was that also a competitor to Llano? A. Yes. Yeah.”).

¹⁰⁹ Nvidia, 2011 Form 10-K, March 13, 2012, p. 4 (“NVIDIA solutions are based on two important technologies: the GPU and the mobile processor...Mobile processors incorporate central processing unit, or CPU, and GPU technologies to deliver an entire computer system on a single chip, or system-on-chip.”).

¹¹⁰ Nvidia, 2012 Form 10-K, March 12, 2013, p. 6 (“Our two primary reporting segments are based on the GPU and Tegra processor.”). In fiscal year 2011, there were three reporting segments including GPU Business, Professional Solutions Business, and Consumer Products Business which became the segments above in fiscal year 2012. *See* Nvidia, 2011 Form 10-K, March 13, 2012, p. 5 (“We have three primary financial reporting segments - GPU Business; Professional Solutions Business, or PSB; and Consumer Products Business, or CPB.”).

¹¹¹ Nvidia, 2012 Form 10-K, March 12, 2013, p. 6 (“GPU: GeForce for consumer desktop and notebook PCs...Quadro for professional workstations...Tesla for supercomputing servers and workstations...GRID Graphics Modules for industry-standard servers...GRID Systems for applications ranging from streaming games to hosting graphics-intensive design applications...Tegra processors are architected to deliver a superior visual and multimedia experience on tablets, smartphones and gaming devices while consuming minimal power.”).

¹¹² Nvidia, 2011 Form 10-K, March 13, 2012, p. 100; Nvidia, 2012 Form 10-K, March 12, 2013, p. 101.

¹¹³ Nvidia, 2012 Form 10-K, March 12, 2013, p. 6 (“We target four market segments – Gaming, Enterprise, Mobile, and Cloud”); p. 9 (“NVIDIA's GRID visual computing appliance is a first of its kind, designed to let users interact remotely with graphics-intensive applications for entertainment and business. By making

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OEMs “that build PCs, workstations, servers, smartphones, and tablets.”¹¹⁴ AMD competed with Nvidia as a supplier of GPUs, as well as a supplier of system-on-chip products for tablets and PCs.¹¹⁵

3. ARM Holdings

46. ARM Holdings (“ARM”) designed “microprocessors, physical IP [intellectual property] and related technology and software, and ... [sold] developmental tools to enhance the performance, cost-effectiveness and energy-efficiency of high-volume embedded applications.”¹¹⁶ ARM’s customers included international electronics companies that licensed ARM’s technology and in turn manufactured, marketed, and sold ARM-based chips to systems companies for use in end products.¹¹⁷ ARM’s processor architecture and physical IP were used in microprocessor applications for smartphones, mobile computers, and PCs, among other products.¹¹⁸ AMD and

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graphics applications available on a network or in the cloud, we aim to expand the GPU’s addressable market to virtually any connected display.”).

¹¹⁴ Nvidia, 2012 Form 10-K, March 12, 2013, p. 6 (“We sell our processors to OEMs that build PCs, workstations, servers, smartphones, and tablets.”).

¹¹⁵ Nvidia, 2012 Form 10-K, March 12, 2013, p. 12 (“Our current competitors include: suppliers of GPUs, including supercomputers and chipsets that incorporate 3D graphics functionality as part of their existing solutions, such as Advanced Micro Devices, or AMD, and Intel; suppliers of SOC products that support tablets, smartphones, and PCs as well as products that are embedded into smart devices such as televisions, monitors, set-top boxes, gaming devices and cars, such as AMD...”).

¹¹⁶ ARM Holdings, 2011 Form 20-F, March 1, 2012, p. 12 (“ARM designs microprocessors, physical IP and related technology and software, and sells development tools to enhance the performance, cost-effectiveness and energy-efficiency of high-volume embedded applications.”).

¹¹⁷ ARM Holdings, 2011 Form 20-F, March 1, 2012, p. 12 (“ARM licenses and sells its technology and products to leading international electronics companies, which in turn manufacture, market and sell microprocessors, application-specific integrated circuits (‘ASICs’) and application-specific standard processors (‘ASSPs’) based on ARM’s technology to systems companies for incorporation into a wide variety of end products.”).

¹¹⁸ ARM Holdings, 2011 Form 20-F, March 1, 2012, p. 12 (“By creating a network of Partners, and working with them to best utilize ARM’s technology, ARM is establishing its processor architecture and physical IP for use in many high-volume embedded microprocessor applications, including cellular phones, digital televisions, mobile computers and PC peripherals and for potential use in many growing markets, including smart cards and microcontrollers.”).

ARM competed in the low-end notebook PC market segment,¹¹⁹ and ARM's production of products for mobile phones, tablets, and small devices put further pressure on AMD's low-end PC products.¹²⁰

4. Limitations of Comparing AMD to Other Firms in the Microprocessor Industry

47. Although the above-mentioned firms competed with AMD in some segments, they also offered unique products and services, and sold to different sets of customers. This heterogeneity limits the appropriateness of using these firms' financial performance as a benchmark for AMD's financial performance. ARM's microprocessor products, for instance, were not primarily targeted for use in PCs.¹²¹ Similarly, Nvidia's business was primarily focused on the graphics market, while AMD produced a greater variety of processors. These firms also operated under vastly different business models; AMD was a fabless microprocessor producer, Intel was an IDM, Nvidia was a fabless graphics product firm, and ARM was a licensor of intellectual property.

48. Intel was AMD's most direct competitor.¹²² Indeed, the PC microprocessor market was a virtual duopoly, with Intel and AMD accounting for 99 percent of the market in 2011 and

¹¹⁹ "Semi Muse-ings: Initial Thoughts into ARM TechCon and Recapping Earnings to Date," *Barclays*, October 29, 2012 [AMD-021-002245553], p. 11 ("We maintain our view that ARM competition is likely to be isolated to the netbook/low-end notebook segment of the market (25% of the overall notebook market) but believe our prior ARM penetration assumptions of 5-10% by 2015 could prove to be conservative. This points to share risk for AMD given its focus on consumer notebooks...").

¹²⁰ "3Q Neg Pre: Weaker PC Demand or Weaker PC Demand and Continued Share Loss?" *Credit Suisse*, October 11, 2012 [AMD-021-002253039], p. 2 ("...we believe INTC has a clear advantage in the high-end (as well as low-end) of the PC market, and the ARM camp will likely gain share at the expense of AMD at the lower-end of the stack (whether it be via tablet cannibalization or low-end PCs).").

¹²¹ ARM Holdings, 2011 Form 20-F, March 1, 2012, p. 16 ("Anticipating the growth in portable and embedded markets, ARM has always focused on producing low-cost microprocessor cores that offer the higher performance that increasingly complex applications demand, yet operate within the power constraints of portable devices.").

¹²² Deposition of Derrick Robert Meyer, June 7, 2016, p. 77:14-17, ("Q. Okay. Would you agree with me that during your time at AMD as the CEO, that your primary competitor when it came to the CPU was Intel Corporation? A. Yes."); p. 79:9-21 ("Q. Well, let me ask you this: Is it fair to say that during your time at AMD, AMD tried to maintain parity with Intel in terms of manufacturing technology? A. 'Tried to maintain parity.'...no, I wouldn't testify to that...Q. Okay. They were your number one competitor? A. Sure."); Deposition of Thomas Seifert, August 11, 2016, pp. 27:21-28:2 ("Q. And, in fact, AMD's chief

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2012.¹²³ However, Intel and AMD had significantly different shares of the market. As shown in Figure C1 of Appendix C, in 2011 and 2012, [REDACTED]

[REDACTED]¹²⁴ The implications of AMD's position as a secondary supplier to Intel during the alleged Class Period, as well as further differences between AMD's and Intel's target markets, are discussed in greater detail in Appendix C.

E. AMD EARNINGS GUIDANCE

49. AMD provided information on the company's expectations of future performance through the release of "guidance" estimates to its investors and other market participants regarding, among other information, its anticipated revenue and gross margin for certain periods. Public guidance estimates, with ranges provided to account for uncertainty, could be more conservative than internal forecasts.¹²⁵ Guidance for the current quarter was provided when announcing actual earnings for the prior quarter and occasionally updated during a quarter via a "pre-announcement."¹²⁶

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competitor was, at the time, Intel? A. In parts for our business, yes. Q. With respect to this – the chip development and manufacturing, its primary arrival [sic] at the time was Intel? A. I would say Intel and NVIDIA.”).

¹²³ During the alleged Class Period, the remainder of the PC microprocessor market was served by vendors such as Applied Micro, Broadcom, Cavium, Cyrix, Freescale, IBM, IDT-Centaur, Marvell, Nvidia, Rise, Samsung, Texas Instruments, Transmeta, and VIA. These vendors made up less than one percent of the microprocessor market. IDC Worldwide Client PC and PC Server Microprocessor 2Q16 Vendor Shares, published August 2016.

¹²⁴ IDC Worldwide Client PC and PC Server Microprocessor 2Q16 Vendor Shares, published August 2016; *See also* “3Q11 Results: Two steps forward, one step back,” *Deutsche Bank*, October 27, 2011 [AMD-021-002254294], p. 1 (“We expect AMD to gain modest share from Intel 2012, as the company rebounds from historically low levels in 2011 (10%).”).

¹²⁵ Deposition of Ruth Cotter, October 27, 2016, p. 197:5-14 (“A. So internally, it's very commonplace that you would have a certain set of assumptions, and your financial model that you're driving the company to. But that may not be the external guidance and model that you've provided to the Street. Often, you would have a more aggressive internal model...I don't know what -- without looking it up, what, at that time, the guidance had been to the Street versus internally.”).

¹²⁶ *See, e.g.*, “AMD Reports Second Quarter Results,” AMD, Press Release, July 21, 2011, (“AMD expects revenue to increase 10 percent, plus or minus 2 percent, sequentially for the third quarter of 2011.”).

V. AMD's Sales Forecasting Process Was Reasonable and Consistent with Common Sales Forecasting Processes

50. Sales forecasting is widely used by firms for planning and resource allocation across different internal functions, such as R&D, marketing, manufacturing, procurement, and logistics, and to coordinate activities across the supply chain.¹²⁷ AMD's sales forecasting process was consistent with sales forecasting processes used by other companies in a wide spectrum of industries.

A. COMMON SALES FORECASTING PROCESSES

51. Sales forecasts vary from short-term (typically three months or less), to medium-term (typically four months to two years), to long-term (typically greater than two years),¹²⁸ and are often generated at monthly or quarterly intervals as new information related to product demand becomes available.¹²⁹ There are various quantitative and qualitative approaches to sales forecasting, each offering its own advantages and disadvantages.

52. Within the set of quantitative approaches, there are two commonly used statistical methods: *time-series extrapolation*, which looks at historical sales data to identify underlying

¹²⁷ Kahn, Kenneth B., "An Exploratory Investigation of New Product Forecasting Practices," *The Journal of Product Innovation Management* 19, 2002, p. 133 ("...new product forecasts drive a variety of multifunctional decisions. These would include manufacturing decisions on raw materials procurement, manufacturing schedules, and finished goods inventory levels; logistics decisions on physical distribution planning and transportation schedules; marketing decisions on marketing budgets and promotion schedules; sales decisions on support materials and salespeople training; and finance decisions on corporate budgets and financial expectations for the new product.").

¹²⁸ McCarthy, Teresa M., Donna F. Davis, Susan L. Golicic and John T. Mentzer, "The Evolution of Sales Forecasting Management: A 20-Year Longitudinal Study of Forecasting Practices," *Journal of Forecasting* 25, 2006, p. 313 ("For techniques most frequently used in the shorter time horizon (≤ 3 months), customer expectations was the most frequently mentioned technique...For the mid-horizon forecasts (4 months to 2 years), jury of executive opinion and exponential smoothing were the first and second most frequently used techniques...Techniques identified for long-horizon forecasting (≥ 2 years) over the past 20 years illustrate some consistencies as well.").

¹²⁹ McCarthy, Teresa M., Donna F. Davis, Susan L. Golicic and John T. Mentzer, "The Evolution of Sales Forecasting Management: A 20-Year Longitudinal Study of Forecasting Practices," *Journal of Forecasting* 25, 2006, p. 307 ("Majority use sales force composite, jury of executive opinion and, moving average prepared monthly and quarterly at all market levels...").

patterns (such as trends and seasonality), and *regression analysis*, which looks for relationships between sales data and external factors, such as advertising.¹³⁰ Any such statistical approach relies on the availability of suitable sales data.¹³¹ In particular, quantitative forecasting methods are only applicable in forecasting sales of existing products for which historical sales data are available, or product line extensions for which reasonable analogies may be drawn.¹³²

53. Qualitative forecasting approaches are most often used in generating sales forecasts for new products for which there are no relevant historical data,¹³³ and where sales patterns may be expected to change.¹³⁴ Such qualitative approaches rely less mechanically on past sales data and instead focus on predicting future sales based on the company's knowledge and expertise.¹³⁵

¹³⁰ Mentzer, John T. and Mark A. Moon, "Chapter 3: Time Series Forecasting Techniques," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, pp. 73-112; Mentzer, John T. and Mark A. Moon, "Chapter 4: Regression Analysis," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, pp. 113-142.

¹³¹ Green, Kesten C. and J. Scott Armstrong, "Demand Forecasting: Evidence Based Methods," *Wharton University of Pennsylvania* Version 165, October 2012, p. 16 ("The first question a forecaster confronts is whether the data are sufficient to develop a quantitative model.").

¹³² Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, "Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses," *Industrial Marketing Management* 28, 1999, p. 566 ("Yet model choice probably depends heavily on product and market characteristics. In high technology business such as computers and telecommunications, for example, change is rapid and frequent, meaning data series are often short or non-existent...Traditional market research techniques, which are side widely used to test minor line extensions of everyday household products are often grossly inappropriate when used in radically-new technological products beyond the scope of consumers' direct experiences.").

¹³³ Mentzer, John T. and Mark A. Moon, "Chapter 5: Qualitative Sales Forecasting," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 3 ("Qualitative forecasting analyses can be used to formulate forecasts for new products for which there are no historical data...").

¹³⁴ Mentzer, John T. and Mark A. Moon, "Chapter 5: Qualitative Sales Forecasting," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 3 ("Qualitative forecasting techniques have the ability to predict changes in sales patterns.").

¹³⁵ Mentzer, John T. and Mark A. Moon, "Chapter 5: Qualitative Sales Forecasting," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 2 ("However, the discussion in this chapter focuses specifically on the efficient and effective use of qualitative (also called subjective or judgmental) forecasting techniques as procedures that turn the

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Qualitative approaches include juries of executive opinion, internal sales force composites, and market research.

54. A *jury of executive opinion* is a “top-down” approach and involves executives from various corporate functions (e.g., marketing, sales, production, and logistics) meeting to generate forecasts collectively.¹³⁶ An *internal sales force composite* is a “bottoms-up” approach whereby individual sales people provide forecasts for their own customer segments.¹³⁷ These partial forecasts are then aggregated to calculate product line and company-wide forecasts.¹³⁸ According to a survey conducted by Dalrymple (1987), “the close relationship between industrial salespeople and their customers encourages industrial firms to use their sales force to forecast.”¹³⁹ This bottoms-up approach benefits from the expertise of people closest to the customer, and places forecasting responsibility on those who have both the ability to affect sales and the incentive to avoid forecasting errors.¹⁴⁰

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opinions, knowledge, and intuition of experienced people (e.g., salespeople, marketing people, corporate executives, outside experts) into formal forecasts.”).

¹³⁶ Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 7 (“When executives from various corporate functions involved in forecasting sales (e.g., finance, marketing, sales, production, and logistics) meet to generate forecasts, is the meeting is [sic] termed a jury of executive opinion.”).

¹³⁷ Kahn, Kenneth B., “An Exploratory Investigation of New Product Forecasting Practices,” *The Journal of Product Innovation Management* 19, 2002, p. 143 (“Sales Force Composite: Sales force composite method is a ‘bottoms-up’ forecasting technique. Individuals (typically salespeople) provide their forecasts.”).

¹³⁸ Kahn, Kenneth B., “An Exploratory Investigation of New Product Forecasting Practices,” *The Journal of Product Innovation Management* 19, 2002, p. 143 (“These forecasts are then aggregated to calculate product line forecasts.”)

¹³⁹ Dalrymple, Douglas J., “Sales Forecasting Practices: Results from a United States Survey,” *International Journal of Forecasting* 3, 1987, pp. 384–385 (“These results agree with previous research and suggest that the close relationship between industrial salespeople and their customers encourages industrial firms to use their sales force to forecast.”).

¹⁴⁰ Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 11 (“...there are important advantages to the sales force composite forecasting technique. It has the potential for incorporating the expertise of people who are closest to the customer. In addition, the technique places forecasting responsibility on those who have both the ability to directly affect product

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55. *Market research* typically uses input from sources either within or outside the firm to inform forecasts.¹⁴¹ Two types of forecasting data can be obtained from market research: primary and secondary data.¹⁴² Primary data may include the use of focus groups and surveys to obtain information on demand for a new product (typically appropriate only for consumer goods),¹⁴³ or expert opinions on anticipated economic activity.¹⁴⁴ Secondary data may include the use of industry reports and other indicators.¹⁴⁵

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sales and the potential to experience the impact (in the form of their customers' displeasure, for example of forecasting errors.”).

¹⁴¹ Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, pp. 14-15 (“The information obtained through market research efforts can, in many cases, enhance qualitative forecasts...trend extensions may be made with the benefit of input from individuals or groups of people with the knowledge and expertise to correctly modify existing trends.”).

¹⁴² Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 15 (“Market research can be conducted using primary data, secondary data, or a combination of primary and secondary data.”).

¹⁴³ Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 15 (“If a company has sufficient resources to undertake market research, it can conduct surveys to obtain primary data...Another means for obtaining primary data that contribute to the forecasting process is to conduct focus groups.”); Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, “Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses,” *Industrial Marketing Management* 28, 1999, p. 566 (“Traditional market research techniques... are often grossly inappropriate when used in radically-new technological products beyond the scope of consumers' direct experiences.”).

¹⁴⁴ Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 15 (“Still another example of using surveys involves a company surveying a sample of economic experts for forecasts of national economic activity or economic activity within an industry.”).

¹⁴⁵ Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 16 (“An alternative to a company gathering specific data for the purpose of enhancing qualitative forecasting decisions is the use of secondary data, that is, data that has been gathered previously, either within a company or by sources external to a company...Another source of secondary data is tracking data in the form of leading and/or simultaneous (coincident) indicators.”).

56. Surveys of forecasting practices employed by firms reveal several trends across industries. First, Dalrymple (1987) and McCarthy et al. (2006) find that qualitative forecasting methods are the most commonly used.¹⁴⁶ Dalrymple (1987) suggests that the frequent use of qualitative methods can be explained by their ease of use.¹⁴⁷ Forecasters tend to be more familiar with qualitative approaches, and managers prefer their simplicity.¹⁴⁸ Based on a survey of 86 forecasting executives, McCarthy et al. (2006) find that juries of executive opinion and bottom-up sales force composites are among the most popular approaches.¹⁴⁹

¹⁴⁶ Dalrymple, Douglas J., "Sales Forecasting Practices: Results from a United States Survey," *International Journal of Forecasting* 3, 1987, p. 381 ("The two most popular forecasting techniques in the 1983 survey were sales force composite and jury of executive opinion. These two subjective methods were the most popular in the 1975 study except that their positions were reversed."). See also McCarthy, Teresa M., Donna F. Davis, Susan L. Golicic and John T. Mentzer, "The Evolution of Sales Forecasting Management: A 20-Year Longitudinal Study of Forecasting Practices," *Journal of Forecasting* 25, 2006, p. 313 ("For techniques most frequently used in the shorter time horizon (≤ 3 months), customer expectations was the most frequently mentioned technique, increasing from the third most frequent in the past two studies. Sales force composite and exponential smoothing, which were the second and third most popular techniques...For the mid-horizon forecasts (4 months to 2 years), jury of executive opinion and exponential smoothing were the first and second most frequently used techniques in the present study...Techniques identified for long-horizon forecasting (> 2 years) over the past 20 years illustrate some consistencies as well. Jury of executive opinion and regression remained as the first and second most frequently used long-horizon forecasting techniques...").

¹⁴⁷ Dalrymple, Douglas J., "Sales Forecasting Practices: Results from a United States Survey," *International Journal of Forecasting* 3, 1987, p. 390 ("The ease of use factor helps explain the observed preferences for simple techniques...").

¹⁴⁸ Dalrymple, Douglas J., "Sales Forecasting Practices: Results from a United States Survey," *International Journal of Forecasting* 3, 1987, p. 390 ("A better explanation may be that business organizations tend to favor methods that are familiar and easy to use.").

¹⁴⁹ McCarthy, Teresa M., Donna F. Davis, Susan L. Golicic and John T. Mentzer, "The Evolution of Sales Forecasting Management: A 20-Year Longitudinal Study of Forecasting Practices," *Journal of Forecasting* 25, 2006, p. 313 ("For techniques most frequently used in the shorter time horizon (≤ 3 months), customer expectations was the most frequently mentioned technique, increasing from the third most frequent in the past two studies. Sales force composite and exponential smoothing, which were the second and third most popular techniques...For the mid-horizon forecasts (4 months to 2 years), jury of executive opinion and exponential smoothing were the first and second most frequently used techniques in the present study...Techniques identified for long-horizon forecasting (> 2 years) over the past 20 years illustrate some consistencies as well. Jury of executive opinion and regression remained as the first and second most frequently used long-horizon forecasting techniques...").

57. Multiple forecasting approaches are often combined to accommodate different situations and improve accuracy.¹⁵⁰ Qualitative methods can also be used to adjust and improve quantitative projections. As Mentzer and Moon (2005) explain, “The value of experience and the ability to analyze complex situations as input to sales forecasts should never be discounted. Indeed, every sales forecast involves some degree of qualitative input.”¹⁵¹

B. SALES FORECASTING CHALLENGES

58. Given the fast pace of innovation in the semiconductor industry, and AMD’s particular position in the microprocessor market, sales forecasting was consistently challenging for AMD.¹⁵² In particular, AMD’s sales forecasting was subject to both uncertainties in demand, especially for new products, and uncertainties in supply for those new products.

1. Forecasting Sales for New Products Is More Error-Prone than Forecasting Sales for Existing Products

59. Methods to forecast new product sales depend on product and market characteristics.¹⁵³ Lynn et al. (1999) conclude that “high-technology businesses tend to use highly qualitative new

¹⁵⁰ Dalrymple, Douglas J., “Sales Forecasting Practices: Results from a United States Survey,” *International Journal of Forecasting* 3, 1987, p. 383 (“A tabulation of the responses showed that the average firm employed 2.7 forecasting techniques on a regular basis. This suggests that most firms do not rely on a single forecasting method, but prefer to compare forecasts from several techniques or use different techniques in different situations.”); Kahn, Kenneth B., “An Exploratory Investigation of New Product Forecasting Practices,” *Journal of Product Innovation Management* 19, 2002, p. 136 (“Results further show that on average, companies use about three techniques when forecasting each of the six types of new products.”).

¹⁵¹ Mentzer, John T. and Mark A. Moon, “Chapter 5: Qualitative Sales Forecasting,” *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., 2005, online version, p. 7.

¹⁵² Deposition of John Docherty, July 22, 2016, p. 281:18–20 (“A. ...the sales forecasts vary, vary tremendously by SKU, by device, by time, up and down.”); pp. 134:22–135:2 (“A. It’s a -- it’s a forecast. People... use the best amount of information available to make that forecast at a point in time. And that’s what that reflects. Very difficult to predict always the amount of down-coring you can do from every die.”); Deposition of Lisa Su, July 13, 2016, p. 246:23–25 (“...when you have a new product in the marketplace, it’s impossible to predict how fast or how slow it will sell.”).

¹⁵³ Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, “Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses,” *Industrial Marketing Management* 28,

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product forecasting methods that rely almost exclusively on sources of data internal to the firm while low-technology businesses rely more heavily on traditional marketing research tools, such as customer surveys, which collect quantitative data from subjects external to the firm.”¹⁵⁴ In high technology businesses, such as AMD’s, qualitative internal methods are favored because markets are dynamic and uncertain, and customers may not fully understand or appreciate the benefits of new products.¹⁵⁵ Other forecasting methods may be “grossly inappropriate” in such a setting.¹⁵⁶

60. Forecasting new product sales is more prone to errors than forecasting sales for existing products. Kahn (2002) notes that this increased likelihood of forecast error results from greater uncertainty along multiple dimensions and a lack of relevant historical data to inform estimates of future demand:

Most executives would agree that any given new product forecast will be wrong. In fact, many executives characterize new product forecasting as an inaccurate endeavor. Some would even say that it is a frustrating, perhaps futile, effort

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1999, p. 566 (“One of the key problems encountered with new product forecasting models is that while there are many models to choose, there is little indication as to which ones are most effective in a given application. Yet model choice probably depends heavily on product and market characteristics.”).

¹⁵⁴ Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, “Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses,” *Industrial Marketing Management* 28, 1999, p. 570.

¹⁵⁵ Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, “Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses,” *Industrial Marketing Management* 28, 1999, p. 570 (“High-technology markets—such as the computer and telecommunications markets studied in this survey—are more dynamic, fast-moving, and uncertain than low-technology markets including office furniture and building materials. Customer opinions, which form the foundation of most traditional market research tools assume that customers *are able* to adequately understand and appreciate the features and benefits a new product offers and predict their own needs for that product. That may be a reasonable assumption for the incremental innovations and line extensions proffered by sellers of office furniture and building materials, but it does not hold for computers and telecommunications where innovations are often radically-new and beyond the experience of most potential customers.”).

¹⁵⁶ Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, “Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses,” *Industrial Marketing Management* 28, 1999, p. 566 (“Traditional market research techniques, which are so widely used to test minor line extensions of everyday household products are often grossly inappropriate when used in radically-new technological products beyond the scope of consumers’ direct experiences.”).

because of minimal data, limited analysis time, and a general uncertainty surrounding a new product and the marketplace.¹⁵⁷

61. Several academic research studies, based on firm surveys, have summarized the lack of accuracy of new product forecasts. I summarize the results from these studies in Figure 5.

Figure 5
Summary of Studies of New Product Forecast Error

Paper Details	Industry	Horizon	Summary of Findings
Tull, Donald S. (1967), "The Relationship of Actual and Predicted Sales and Profits in New Product Introductions"	63 products from 16 large, well-managed manufacturing companies	<1 to 10 years	Forecasted sales exceeded actuals in 66% of cases, with a mean relative forecast error of 65%. Forecasts of profits tended to be even more prone to error and over-optimism.
Beardsley, George and Edwin Mansfield (1978), "A Note on the Accuracy of Industrial Forecasts of the Profitability of New Products and Processes"	57 products from a single major firm	9 years	The ratio of forecasted discounted profits to actuals ranged from less than 0.3 to over 4, with forecasts for 8 products exceeding actuals by a factor of 4 or more.
Shelley, Charles J. and David R. Wheeler (1991), "New Product Forecasting Horizons and Accuracy"	High-tech products (PCs, artificial intelligence, and fiber optics)	1 to 5 years	The mean ratio of actual to forecasted sales was .79 for a one year horizon, falling to .41 for a five year horizon.
Gartner, William B. and Robert J. Thomas (1993), "Factors Affecting New Product Forecasting Accuracy in New Firms"	113 new, mostly small and privately-held, US software firms	2 years	Forecast error (actual sales minus forecast sales as percent of actual sales) ranged from -2900% to +1500%, with a mean of -46.9%, including ten firms with percentage errors worse than -100%.
Kahn, Kenneth B. (2002), "An Exploratory Investigation of New Product Forecasting Practices"	201 products from 168 firms in various industries	20 to 36 months	Average "forecast accuracy" decreased the more innovative the product: 65% for product improvements, 63% for line extensions, 54% for market extensions, 47% for new-to-company products, 40% for new-to-the-world products.

Notes: Kahn (2002) does not specify how "forecast accuracy" is defined.

62. As Figure 5 indicates, forecasting sales or profits of new products is inaccurate more often than not, and errors more often result from sales falling short of predictions than vice versa. The

¹⁵⁷ Kahn, Kenneth B., "An Exploratory Investigation of New Product Forecasting Practices," *Journal of Product Innovation Management* 19, 2002, pp. 133-143.

studies summarized in Figure 5 also indicate that it is not unusual for forecasted sales to be on the order of 50 percent larger than actual sales.¹⁵⁸ Both Beardsley et al. (1978) and Gartner and Thomas (1993) provide evidence of forecasts that were multiple times larger than the profits or sales that actually materialized.¹⁵⁹

63. Some of the studies identify factors that are associated with greater error. Tull (1967) finds evidence that profit forecast error tends to be significantly higher for new industrial products than for new consumer products.¹⁶⁰ This finding is reiterated in later literature on new product forecasting.¹⁶¹ AMD's semiconductor products would be considered industrial products in the context of this literature.¹⁶²

¹⁵⁸ See e.g., Kahn, Kenneth B., "An Exploratory Investigation of New Product Forecasting Practices," *Journal of Product Innovation Management* 19, 2002, p. 136 ("A total of 49 companies provided data on their new product forecast accuracies. The overall average accuracy across the six types of new products was 58%, with cost improvements generally 72% accurate; product improvement forecasts 65% accurate; line extension forecasts 63% accurate; market extension forecasts 54% accurate; new category entry (new-to-the-company) forecasts 47%; and new-to-the-world products 40% accurate.").

¹⁵⁹ Beardsley, George and Edwin Mansfield, "A Note on the Accuracy of Industrial Forecasts of the Profitability of New Products and Processes," *The Journal of Business* 51(1), 1978, p. 128 ("Then, as a simple measure of the size of the forecasting errors, we calculate the proportion of cases where [the forecast divided by actual discounted profits] was greater than or equal to 2.0 or less than or equal to 0.5... The initial forecasts-those made 1 year after development-were generally quite poor, the proportion... being 0.50 for processes and 0.62 for products."); Gartner, William B. and Robert J. Thomas, "Factors Affecting New Product Forecasting Accuracy in New Firms," *Journal of Product Innovation Management* 10, 1993, p. 41 ("New product forecast accuracy, the major variable of interest in this study, was developed with the following error measure: % Error = (Actual Sales – Forecast Sales)/Actual Sales... Error measures vary from -2900% to +1500%...").

¹⁶⁰ Tull, Donald S., "The Relationship of Actual and Predicted Sales and Profits in New-Product Introductions," *Journal of Business* 40(3), 1967, p. ("The mean relative error of profit for new consumer products is significantly lower than that for new industrial products.").

¹⁶¹ Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, "Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses," *Industrial Marketing Management* 28, 1999, p. 566 ("...estimating market potential and forecasting sales for high-technology products is considerably more difficult for industrial products than consumer products.").

¹⁶² Industrial products are defined as those that, for the most part, do not reach the final consumer without further alteration. Consumer products, such as food items and household goods, are sold to the consumer as is. AMD's semiconductor products would be considered industrial products in this context.

64. Kahn (2002) finds that the newer and more innovative a product is, the less accurate its expected forecasts.¹⁶³ Gartner and Thomas (1993) find statistical evidence that certain market characteristics, including fewer competitors and market volatility in general, both of which characterized the microprocessor industry during the Class Period (as I discuss in Section VI.B.2), are associated with higher errors in the forecast of new products.¹⁶⁴ The authors note that “certain environments may be so chaotic that it may be close to impossible to obtain any kind of forecast accuracy.”¹⁶⁵

65. The studies included in Figure 5 span a variety of industries, including high-tech and PC products. In a similar example, Hewlett-Packard launched an innovative disk-drive product named Kittyhawk in 1992.¹⁶⁶ By 1994, actual production volume was less than 15 percent of planned production and the end use products for which Kittyhawk was eventually purchased differed substantially from the intended targets.¹⁶⁷

2. Forecasting New Product Supply Is Difficult

66. Forecasting sales of a new product, particularly in the microprocessor industry, is challenging for the additional reason that the firm must also forecast the supply of its new

¹⁶³ Kahn, Kenneth B., “An Exploratory Investigation of New Product Forecasting Practices,” *Journal of Product Innovation Management* 19, 2002, pp. 138-140 (“One should expect higher forecast accuracy with cost improvements and product improvements than new-to-the-world products.”).

¹⁶⁴ Gartner, William B. and Robert J. Thomas, “Factors Affecting New Product Forecasting Accuracy in New Firms,” *Journal of Product Innovation Management* 10, 1993, p. 46 (“Firms more accurate in their forecasting tend to...introduce products into less volatile (entered their market later and faced larger number of competitors) and more focused markets...”).

¹⁶⁵ Gartner, William B. and Robert J. Thomas, “Factors Affecting New Product Forecasting Accuracy in New Firms,” *Journal of Product Innovation Management* 10, 1993, p. 47.

¹⁶⁶ Christensen, Clayton M., “Hewlett-Packard: The Flight of the Kittyhawk (A),” *Harvard Business School Cast Study*, 9-606-088, 2006, p. 1 (“In June of 1992, Hewlett-Packard (HP) introduced the smallest hard disk drive in the world, named the Kittyhawk.”).

¹⁶⁷ Christensen, Clayton M., “Hewlett-Packard: The Flight of the Kittyhawk (A),” *Harvard Business School Cast Study* 9-606-088, 2006, p. 11 (“As a result, the list of Kittyhawk customers...was very different from what the team had originally planned.”); p. 18, Exhibit 7.

product—that is, how much product it will have available to sell.¹⁶⁸ Production difficulties may unexpectedly limit the firm’s supply, thus making it more difficult to forecast sales.

a. Ramp-Up Production Risks Are Common in the Microprocessor Industry

67. The production of high-tech products is often characterized by uncertain and costly development processes, paired with the need to reach a target level of production capacity in a relatively short timeframe.¹⁶⁹ The period from completing a new product’s development to its maximum production capacity utilization is known as production “ramp-up,” and new products introduced into manufacturing facilities usually undergo a ramp-up period. The length of the ramp-up period varies by industry, by the producer, and by the product in question. The ramp-up period is often characterized by low, uncertain production capacity that may not meet demand.¹⁷⁰

¹⁶⁸ Deposition of Emilio Ghilardi, October 25, 2016, pp. 149:14–150:7 (“A. One additional element about this is that this industry is dealing daily with unmatched demand and supply. So things are never black or white. At any given point of time that there is not enough supply of X and an excess supply of Y...the strength of the PC business model is that it’s a combination of elements that actually all work together, so you may not have your perfect solution, but with the combination of what is available and some price flexibility, most of the time you solve the problems. But this industry is in a constant state of not enough supply of Y and excess supply of Z.”); Deposition of Lisa Su, July 13, 2016, p. 30:4-9 (“A. Well, in our business, you know, there are always mismatches or small mismatches between demand and supply on an ongoing basis. You know, if we run, whatever, a dozen products or so, you know, there might be, you know, one or two products that are mismatched to demand.”); p. 172:3-8 (“A. I would say, at this point in time – as with any new product, you create a plan for how you think the product will ramp in the marketplace. And I would say almost never are we right. We’re either too optimistic or we’re too pessimistic. But it’s hard to predict it correctly.”).

¹⁶⁹ Terwiesch, Christian, and Roger E. Bohn, “Learning and Process Improvement During Production Ramp-up,” *International Journal of Production Economics* 70, 2001, p. 1 (“Rapid product lifecycles and high development costs pressure manufacturing firms to cut not only their development time (time-to-market), but also the time to reach full capacity utilization (time-to-volume). The period between completion of development and full capacity utilization is known as production ramp-up. During that time, the new production process is ill understood, which causes low yields and low production rates.”).

¹⁷⁰ Terwiesch, Christian, and Roger E. Bohn, “Learning and Process Improvement During Production Ramp-up,” *International Journal of Production Economics* 70, 2001, p. 1 (“The period between the end of product development and full capacity production is known as production *ramp-up*. Two conflicting factors are characteristic of this period: low production capacity, and high demand.”).

68. The microprocessor production process is particularly complex, with many steps involved in the production of a finished, saleable chip.¹⁷¹ The manufacture of microprocessor chips like AMD's required transistors being built on top of a silicon wafer, followed by the application of multiple layers of microscopic wiring.¹⁷² It is at the end of this process that the chips on each wafer are tested for functionality, and the percentage of chips that meet certain functionality specifications (or "yield") is known.¹⁷³

69. If yields turn out to be lower than planned, supply constraints may complicate a firm's ability to forecast its sales. Such risks are common in the semiconductor industry,¹⁷⁴ and these

¹⁷¹ Deposition of Emilio Ghilardi, October 25, 2016, p. 89:11-12 ("A. Semiconductor manufacturing is a long and complex process."); p. 117:6-10 ("A. As I mentioned, the manufacturing of semiconductors, and specifically processors is a very complex process, and it happens that one day you have good news, the day after you have not so good news.").

¹⁷² Chafkin, Max and Ian King, "How Intel Makes a Chip: The development of a microprocessor is one of the riskiest, costliest, and most technically complex feats in business," *Bloomberg Businessweek*, June 9, 2016 ("Chips are made by creating tiny patterns on a polished 12-inch silicon disk, in part by using a process called photolithography and depositing superthin layers of materials on top... Over the next three months—three times the amount of time it takes Boeing to manufacture a single Dreamliner—these wafers will be transformed into microprocessors. They'll make their way through more than 2,000 steps of lithography, etching, material application, and more etching.").

¹⁷³ Deposition of Rory Read, July 27, 2016, pp. 98:2-16 ("A. ...Sometimes, and the way you move them through this set of machines to create the actual final product, you change the dials, you change the formula as you go. And you're hoping and you're expecting that that increases yield based on your analysis. It doesn't always do that. Sometimes you have a decline, sometimes you have up. It's not a straight line. They're testing because of the complexity and because they have a period of time that has to go through the cycle. It's relatively long periods of time before you can find it. It's not like a day, you make a change and you get the answer. You have to move it through the process and start new wafers to see does it have that impact.").

¹⁷⁴ Deposition of Emilio Ghilardi, October 25, 2016, pp. 150:9 – 151:8 ("Q. And you mentioned daily effort to match supply and demand. Would you agree, however, that – at least with regard to your supply, because of the length of time it took to make these products, you would probably know months in advance what your supply picture would look like a quarter out?... A. No. No. I would not agree with that. Because you know the plan, but you don't know the results. Again, I'm not a manufacturing expert, but I told you my understanding is that it may take 13 weeks from the moment you put the wafer in to the moment you get the chip out. Right. So let's assume the process works very well until week 13 and then something bad happens at the end. You would have assumed for 12 weeks that everything was going as per plan and then suddenly you don't see the products coming out because something wrong happened at the last stage of the manufacturing. You didn't know it 13 weeks before. You discover it at the end, and

Continued on next page

risks have become more salient as process nodes have become progressively smaller.¹⁷⁵ For example, TSMC, the largest foundry supplier in the world,¹⁷⁶ faced production issues related to both its 28-nm and 40-nm products. One of TSMC's clients, Nvidia, noted that due to capacity constraints at TSMC of 28-nm products, the company faced negative financial results in subsequent quarters.¹⁷⁷ Nvidia, Qualcomm, and AMD were all impacted by TSMC's supply constraints in 2010, 2011, or 2012.¹⁷⁸ Nvidia explained "[w]e have experienced difficulty in

Continued from previous page

that is particularly true when you try to build a new product with a new technology in a new geometry, or in a new manufacturing capability.”).

¹⁷⁵ “Restructuring story, execution key, Reinstate Neutral,” *Bank of America Merrill Lynch*, February 4 2011 [AMD-021-002250592], p. 3 (“However, to be more positive on the stock, we would like to see evidence of notebook share gains with its new Fusion processors, a more competitive server line-up with its next generation Bulldozer architecture and successful execution with its foundry partner, Global Foundries at the challenging 32/28nm process nodes.”); p. 12 (“GF (and the IBM fab club) is planning to use challenging ‘gate first’ manufacturing process for the 28nm process node, which had substantial production yield risks vs. the competing ‘gate last’ process being used by Intel and TSMC.”); Hruska, Joel, “A Closer Look at Intel’s Broadwell Delay and Defect Density Problems,” *IT ProPortal*, October 17, 2013 (“...what Intel dismisses as ‘just a defect density’ issue is, in fact, profoundly at the heart of the problems facing modern semiconductor manufacturing... As semiconductor nodes shrink, the difficulty of building ever-smaller transistor layouts becomes increasingly acute.”).

¹⁷⁶ “Research Bulletin: Top 13 Foundries Account for 91% of Total Foundry Sales in 2013,” *IC Insights*, January 28, 2014 (“TSMC, by far, remained the leader with almost \$20 billion in sales in 2013.”).

¹⁷⁷ Nvidia, 2012 Form 10-K, March 12, 2013, p. 16 (“For example, due to capacity constraints at TSMC of our 28 nanometer Kepler GPUs in the first quarter of fiscal year 2013, we were unable to fulfill customer demand for our high-end desktop GPU products, and as our sales mix shifted to our mainstream desktop GPU products, revenue and gross margins for the first quarter of fiscal year 2013 were negatively impacted compared to the prior quarter. We experienced continued 28 nanometer-supply constraints in the second quarter of fiscal year 2013.”).

¹⁷⁸ “NVIDIA: Life Choices,” *Arete*, April 5, 2011 [AMD-021-002265765], p. 4 (“TSMC’s yield problems with 40nm severely constrained both AMD and NVIDIA in 1HCY10, and we see this shift as a major risk for both players.”); “Williams Financial Morning Call: QCOM, AMD, DO, NE, BAS, ESV, UFPI,” *Williams Financial Group*, April 19, 2012 [AMD-021-002281078], p. 1 (“QCOM delivered another solid upside for the March quarter on both revenue and EPS but unfortunately saw its shares suffer after hours as its 3Q outlook was well below expectations. The issue looks to be the constrained supply of 28nm, with which QCOM is addressing the LTE market. The supply problems are at TSMC, who has been struggling with 28nm yields for several months and obviously is not making fast enough improvements to meet demand.”).

migrating to new manufacturing processes in the past and, consequently, have suffered reduced yields, delays in product deliveries and increased expense levels.”¹⁷⁹

b. Outsourcing to Third-Party Manufacturers Increases Supply Risks

70. Forecasting sales is especially challenging when a firm relies on outsourced production of its products. In the event of a supply constraint, manufacturers have a variety of means with which they can close the gap on a supply shortfall. For example, a manufacturer may prioritize the production of one product over other products in the manufacturing line.¹⁸⁰ Where these manufacturing prioritization decisions must be made, as may be necessary during the ramp-up phase for production of new products, outsourcing externalizes control over such prioritization decisions. As a result, companies with outsourced manufacturing have a reduced ability to manage supply challenges and therefore bear increased risk of supply-driven delays and shortfalls.¹⁸¹

71. Indeed, academic research has confirmed that outsourcing production to third-party sources has resulted in product launch delays. For example, in analyzing the dynamic random access memory (“DRAM”) industry, I, with my colleague Ron Adner,¹⁸² document outsourcing as

¹⁷⁹ Nvidia, 2012 Form 10-K, March 12, 2013, p. 16.

¹⁸⁰ See e.g., Burgelman, Robert A., “Fading Memories: A Process Theory of Strategic Business Exit in Dynamic Environments,” *Administrative Science Quarterly* 39(1), 1994, p. 49 (“[Intel’s] maximize-margin-per-wafer-start rule required product divisions to compete for shared manufacturing resources and forced open debates concerning resource allocation.”).

¹⁸¹ Chopra, Sunil and ManMohan S. Sodhi, “Managing Risk to Avoid Supply-Chain Breakdown,” *MIT Sloan Management Review* 46(1), 2004, p. 54 (“Supply chain risks can become full-fledged supply-chain problems, causing unanticipated changes in flow due to disruptions or delays...A simple delay along the chain may create a temporary risk, whereas a sole supplier holding up a manufacturer to force a price increase represents a long-term risk.”); Lonsdale, Chris, “Effectively Managing Vertical Supply Relationships: A Risk Management Model for Outsourcing,” *Supply Chain Management: An International Journal* 4(4), 1999, p. 183 (“What this article has discussed, however, is what the author perceives to be the two main risks of the practice: the loss of the resources that underpin competitiveness and the danger of dependency on suppliers.”).

¹⁸² Kapoor, Rahul, and Ron Adner, “What Firms Make vs. What They Know: How Firms’ Production and Knowledge Boundaries Affect Competitive Advantage in the Face of Technological Change,” *Organization Science* 23(5), 2012 pp. 1227-1248.

one of the main drivers of launch delay, especially for new product architectures (like Llano).¹⁸³ Tang and Zimmerman (2009) discuss a detailed case study of the launch of Boeing's Dreamliner 787 and found that the launch delay could be largely explained by its supply chain structure, featuring a higher percentage (approximately 70%, compared to 35-50% for another of its planes, the Boeing 737) of outsourced production activities.¹⁸⁴ They also document that Boeing subsequently resolved its supply issues through acquisitions of several of its main suppliers.¹⁸⁵

72. The uncertainties in supply resulting from outsourced production can further translate into uncertainties in a firm's cost of goods sold, depending on the structure of supply contracts. Under a cost-plus agreement, the purchaser covers the costs of production, regardless of actual product supply.¹⁸⁶ In the context of microprocessor production, lower than expected yields

¹⁸³ Architectural innovations change the way in which the components of a product are linked together. See Henderson, Rebecca M. and Kim B. Clark, "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms," *Administrative Science Quarterly* 35(1), 1990, p. 10 ("We define innovations that change the way in which the components of a product are linked together, while leaving the core design concepts (and thus the basic knowledge underlying components) untouched, as 'architectural' innovation.").

¹⁸⁴ Tang, Christopher S., Joshua D. Zimmerman and James I. Nelson, "Managing New Product Development and Supply Chain Risks: The Boeing 787 Case," *Supply Chain Forum: An International Journal* 10(2), 2009, p. 83 ("Boeing's ongoing issues with meeting delivery deadlines are a direct result of its decision to make drastic changes in the design, the development process, and the supply chain associated with the Dreamliner program..."); p. 77 ("Sourcing strategy – 737 Program: Outsourced 35-50%; 787 Program: Outsourced 70%").

¹⁸⁵ Tang, Christopher S., Joshua D. Zimmerman, and James I. Nelson, "Managing New Product Development and Supply Chain Risks: The Boeing 787 Case," *Supply Chain Forum: An International Journal* 10(2), 2009, p. 81 ("After realizing that some tier-1 strategic partners did not have the know-how to develop different sections of the aircraft or experience in managing their tier-2 suppliers to develop the requisite components for the sections, Boeing recognized the need to regain control of the development process of the 787. For instance, knowing that Vought Aircraft Industries was the weakest link in the Boeing's 787 supply chain, Boeing acquired one unit of Vought in 2009 and then another unit in 2009 (Ray, 2008; Sanders, 2009a). These two acquisitions provide Boeing direct control of these two units of Vought and their tier-2 suppliers for the fuselage development.").

¹⁸⁶ Hanson, Ward, "The Dynamics of Cost-Plus Pricing," *Managerial and Decision Economics* 13, 1992, p. 149 ("Cost-plus pricing is often defended by firms using it as a heuristic that allows 'fair' or 'reasonable' prices to be determined without precise knowledge of market demand or marginal cost conditions.").

would then drive up the cost per chip.¹⁸⁷ Similarly, the cost per chip is uncertain under a supply contract that includes a fixed payment,¹⁸⁸ as the number of chips over which that fixed cost will be distributed is unknown in advance. These complexities in projecting costs result in an additional layer of uncertainty in forecasting gross margins relative to forecasting product sales. These challenges are ignored by Mr. Flemmons in his allegations that AMD made misleading statements about Llano gross margins.¹⁸⁹

C. AMD'S FORECASTING PROCESS WAS CONSISTENT WITH COMMON FORECASTING PROCESSES

1. AMD's Demand Forecasting Process

73. AMD's forecasting process combined the *jury of executive opinion*, *internal sales force composite*, and *market research* methodologies into a five-stage process¹⁹⁰ such that each process provided market color and strategic guidance to the other. AMD's forecasting process took approximately nine weeks from the initial planning stage to the adoption of the forecasts for the coming month.¹⁹¹

¹⁸⁷ "AMD Modifies Supply Agreement with GF," *Barclays Capital*, April 4, 2011 [AMD-021-002246719], p. 1 ("After experiencing initial delays in meeting shipment targets for new 32nm parts and in an effort to better align costs with yields, AMD has decided to move away from a 'cost-plus' model and has committed to purchase a fixed number of wafers in 2011 paying a fixed price for 45nm and paying GF based on 'good die' for 32nm wafers.").

¹⁸⁸ See e.g., "Wafer Supply Agreement Amendment No. 1," Advanced Micro Devices, Inc. and GLOBALFOUNDRIES Inc., April 2, 2011 [AMD-003-000027801], Schedule D [REDACTED]

See also Knoblich, Konstanze, Hans Ehm, Cathal Heavey and Peter Williams, "Modeling Supply Contracts in Semiconductor Supply Chains," *Proceedings of the 2011 Winter Simulation Conference*, 2011, p. 2114 ("The pricing determines how transactions between the two contract parties translate into financial streams. For example, the wholesale price can be written as $w(q) = F + qt$ for an order quantity q , where F is the fixed cost and t the variable cost factor. For a positive F , this wholesale price contract is called a two part tariff because it includes both a fixed payment and a variable payment.").

¹⁸⁹ Expert Report of Mr. Jason S. Flemmons, November 18, 2016, ¶57.

¹⁹⁰ See, e.g., "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5.

¹⁹¹ See, e.g., "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5; See also "Accounting estimates documentation template," AMD, December 29, 2012 [EY-AMD-EF-000070.pdf], p. 5.

74. In the first step in the forecasting process, AMD management produced market data and growth assumptions to the sales team.¹⁹² This step ensured that both parties were “aligned” in this regard.¹⁹³ Second, initial target figures were developed by AMD management using a “top down” approach.¹⁹⁴ AMD management developed their initial forecasts based on a number of different factors, including: (1) market growth and data assumptions discussed above, including the number of units in the total available market and AMD’s projected share in the market;¹⁹⁵ (2) historical trends in revenues, unit sales, and average selling price;¹⁹⁶ (3) factors affecting different aspects of the business such as regional differences, product groups, and major accounts;¹⁹⁷ and (4) the impact of new product launches on the product mix.¹⁹⁸ Management’s initial forecasts were then adjusted based on overall assumptions about changes occurring in the industry and

¹⁹² See, e.g., “EMEA Tops Down Targets Review,” AMD, May 2011 [20110514_AMD-013-001639413], p. 5 (“Bus Mgmt sends market/account TAM and growth assumptions to sales for sign off.”); Deposition of Darren Grasby, June 22, 2016, p. 41:9–12 (“A.... the forecast demanding has to come from AMD internal sales rather than the customer telling...what they want, otherwise, you end upside-down very quickly.”);

¹⁹³ See, e.g., “EMEA Tops Down Targets Review,” AMD, May 2011 [20110514_AMD-013-001639413], p. 5 (“Ensure the organization is aligned and avoid ‘that’s not the right number’ discussions.”).

¹⁹⁴ See, e.g., “EMEA Tops Down Targets Review,” AMD, May 2011 [20110514_AMD-013-001639413], p. 5 (“Develop Tops Down Target...Bus Mgmt sends sell-out/derived sell-in targets to sales...Bus Mgmt & PG present target rationale to sales.”).

¹⁹⁵ See, e.g., “EMEA Tops Down Targets Review,” AMD, May 2011, [20110514_AMD-013-001639413], p. 76 (“The feedback gathered on TAM is being shared with AMD Market Intelligence team so that it is incorporated in the June version of ‘Green book’. Additionally, any significant impact feedback will be used to tweak Q3 ‘Tops Down’ targets in some cases.”); pp. 24–26.

¹⁹⁶ See e.g., “EMEA Tops Down Targets Review,” AMD, May 2011 [AMD-013-001639413], pp. 27–31.

¹⁹⁷ Email from Kevin Morgan to Emilio Ghilardi, copying Hans Erickson, Chris Goelkel, Iffat Mushtaq, Susan Bullock, Denise Gourlay, and Gary McAdam, May 6, 2011 [AMD-003-000250524] (“The tops down targets incorporate the following high level set of assumptions:... Grow unit share in notebook CPU and increase ASP’s with the addition of Llano... Share increases in the sell out expectations for APAC and Greater China. Sell out share expectations for EMEA are flat, with slight increases for Americas and Japan/Korea...Maintain share in NB graphics, through high share @ Apple, recovery from Acer in Q4’11 and tempered with decreases at Dell, HP and Lenovo”).

¹⁹⁸ “EMEA Tops Down Targets Review,” AMD, May 2011 [20110514_AMD-013-001639413], p. 66 (“Marketing Investment Assumptions: Standard 2H2011 ACF Earn Rates – New Product Mix”).

AMD's performance relative to historical benchmarks,¹⁹⁹ and management would communicate its top-down targets and rationales to the sales team in team meetings.²⁰⁰

75. Third, based on these strategic targets, the various sales teams collaborated to develop responses indicating their ability and proposed strategy to obtain the target numbers using a "bottoms-up" approach.²⁰¹ The sales team provided refinements to the initial forecast by validating or correcting the top-down targets based on their more granular understanding of customer demand.²⁰² This included a review of the regional-level targets and the reasonableness of these targets.²⁰³ Commentary and insights from the sales team were welcomed.²⁰⁴ In refining

¹⁹⁹ See e.g., "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 43 ("AMD's revenue among EMEA's channel expected to significantly lower than the overall AMD server business"); p. 44 ("Unique opportunity among the EMEA channel enabled significant share growth in Q1'11").

²⁰⁰ "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5 ("Bus Mgmt & PG present target rationale to sales... Ensure sales knows target rational [sic] to best prepare response.").

²⁰¹ Email from Spencer Pan to Asuka Nomura, copying JD Lau and Lilie Zhao, May 10, 2011 [AMD-003-000406560] ("We received the 'top down' target (Q3/Q4) today from Chris G and Kevin Morgan and we are expected to come back with a 'bottom up' response in the next 2 weeks following [sic] by a final call by Emilio. So following this process, we will digest the 'top down' target first these few days and will definitely update the WW19 sales forecast by then."); "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5 ("Develop Bottoms Up Response...Sales generates target response, focusing on variances and how to fill gaps...Understand target risks and challenges along with help needed to hit targets.").

²⁰² Deposition of Lisa Su, July 13, 2016, p. 46:1-11 ("Q. So if you were trying to figure out how much of a product the channel wanted, how would you find that information out? A. So in that period of time, I would say that customer demand was -- came primarily from the sales force, so they would forecast what they believed they would sell in a given quarter. Some of that may have come directly from the customer; some of that may have been estimates from the sales force.").

²⁰³ "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5 ("GAMs and Regions align on regional sell out targets.").

²⁰⁴ Email from Kevin Morgan to Darrel Ward, Renato Urani, Vincent Feng, Darren Grasby, David Fionda, Kim Little, Spencer Pan, David Kwon, Nick Lazaridis, Tomonobu Kamiya, Keisuke Matsumoto, Ed DaSilva, and Rung-Kai Tsay, copying Tom Butler, Melinda Andres-Brenner, David Rooney, Kevin Owen, Chris Goelkel, Hans Erickson, DeFilippo Carmen, Serene Tay, Tanya Pelletier, Lilie Zhao, Chris Raeder, John C. Morris, Gen Sullivan, Susan Bullock, Luigi Gallicchio, Iffat Mushtaq, and Gerald Youngblood, May 13, 2011 [AMD-003-000405711] ("Update the forecast template with your commentary and insight. An example of the Forecast Review template is attached. Business management will update the attached

Continued on next page

forecasts for Q3 2011 and Q4 2011, for example, the sales team provided their quantitative forecasts with qualitative adjustments based on HP's revenue announcement and product group specific updates.²⁰⁵

76. Fourth, after evaluating management's top-down targets, the sales team presented their response to the Chief Sales Officer ("CSO"), Finance, Business Management, and Products Group teams²⁰⁶ in the form of regional Forecast Review meetings.²⁰⁷ These meetings solicited an understanding by all parties of the challenges and additional steps needed to achieve the proposed targets.²⁰⁸ At this time, the sales team also presented any considerations to be regarded when deciding on the final forecasts.²⁰⁹ The CSO would then make a decision on the final forecasts, which became the sales teams' targets.²¹⁰

77. The final step in the forecasting process involved a meeting between the CSO and the Corporate Operating Committee ("COC") in which the CSO presented the forecasts decided upon by management and the sales team.²¹¹ Upon approval by the COC, the sales teams subsequently

Continued from previous page

template with your respective BPC forecast and provide back to you by Noon, Wednesday, May 18th (CDT)."

²⁰⁵ "Business Planning Process – 2011," AMD, May 19, 2011 [AMD-003-000405715], p. 1.

²⁰⁶ "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5 ("Sales presents response to CSO, Finance, Bus Mgmt, PG.").

²⁰⁷ *See, e.g.*, Email from Kevin Morgan to Francesco di Bari, copying Alberto Bozzo, Hans Erickson, Chris Goelkel, Iffat Mushtaq, Royston Thompson, Mary Rose Tannam, Andrew Buxton, and Darren Grasby, May 20, 2011 [AMD-003-000271539] ("As per our email from last week, we would like to capture...your teams' insights and commentary on the bottoms up response. I am attaching the template that we plan to use in the forecast reviews next week. These have been pre-populated with 2010 actual, tops down targets, bottoms up responses (base and upside), and variance. Please fill in the comments box with your rationale for the bottoms up numbers.").

²⁰⁸ "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5 ("Provide forum for the broader organization to understand challenges and help needed.").

²⁰⁹ "EMEA Tops Down Targets Review," AMD, May 2011 [20110514_AMD-013-001639413], p. 5 ("Give sales teams a chance to state their case to the decider.").

²¹⁰ "EMEA Tops Down Targets Review," AMD, May 2011 [AMD-013-001639413], p. 5 ("CSO decides final sales teams' targets.").

²¹¹ "EMEA Tops Down Targets Review," AMD, May 2011 [AMD-013-001639413], p. 5 ("CSO meets with COC to present forecast.").

updated the finalized forecast data into AMD's demand forecasting system on a monthly basis, by customer, by region, and by quarter.^{212,213}

78. In my experience and based on the research discussed above, AMD's process of generating sales forecasts was reasonable and consistent with common sales forecasting practices. As discussed above, qualitative forecasting approaches, such as juries of executive opinion, internal sales force composites, and market research utilized by AMD are commonly used by firms in a wide variety of industries, and particularly by firms launching new products, operating in high-tech industries, or primarily engaged in business-to-business commerce.²¹⁴ During the Class Period, AMD operated in a high-tech industry, launched three new product families within a new product class (APUs), and engaged primarily in commerce with OEMs and channel customers rather than with end users.

²¹² Deposition of Lisa Su, July 13, 2016, p. 47:1-5 (“[T]he teams would load what they believed the demand would be – I’m sorry. Yes, what they believed the demand would be, you know, by customer, by region, for a given quarter or a given number of quarters.”).

²¹³ The monthly forecasts were known as Product Development Plans (PDPs) in 2011 and Monthly Operating Forecasts (MOFs) in 2012. [AMD-015-001679889, AMD-015-001680262, AMD-003-000322424, AMD-003-000324003, AMD-003-000435154, AMD-008-001133287, AMD-003-000438492, AMD-008-001297157, AMD-002-000013039, AMD-003-000253449, AMD-003-000279558, AMD-016-001828980, AMD-003-000454099, AMD-003-000454185, AMD-003-000453547, AMD-003-000457125, AMD-003-000458827, AMD-003-000460384, AMD-003-000461027, AMD-003-000463038, AMD-003-000463774, AMD-003-000465277].

²¹⁴ Kahn, Kenneth B., “An Exploratory Investigation of New Product Forecasting Practices,” *The Journal of Product Innovation Management* 19, 2002, p. 136 (“It is also interesting to observe that these techniques appear to be somewhat equally applied across the different types of new products, which suggests that new product forecasters commonly employ qualitative forecasting techniques...”); Lynn, Gary S., Steven P. Schnaars and Richard B. Skov, “Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses,” *Industrial Marketing Management* 28, 1999, p. 565 (“In particular, successful high-tech industrial projects tended to rely more on internal qualitative forecasting techniques whereas low-tech industrial projects tended to rely more on conventional quantitative market-based techniques.”); Dalrymple, Douglas J., “Sales Forecasting Practices: Results from a United States Survey,” *International Journal of Forecasting* 3, 1987, p. 384–385 (“Note that industrial firms have a much stronger preference (34%) than producers of consumer goods (13%) for the sales force composite method.”).

2. AMD's Forecasting Challenges

79. Given the fast pace of innovation in the semiconductor industry, and AMD's particular position in the microprocessor market, sales forecasting was consistently challenging for AMD. In particular, AMD's forecasting was constrained on both sides by uncertainties in supply,²¹⁵ particularly for new product processes such as the 32-nm process used for Llano, and uncertainties in demand.²¹⁶

a. Llano, Trinity, and Brazos were New Products within a New Product Category

80. As discussed above, Kahn (2002) finds that the newer and more innovative a product is, the less accurate its expected forecasts.²¹⁷ In 2011 and 2012, AMD released an entire class of new products ("APUs"), and within that product class, AMD launched three series of chips: Brazos, Llano, and Trinity. AMD also produced many different *types* of chips within each product family.²¹⁸ APUs were a new product category for AMD and for the entire microprocessor industry,²¹⁹ and the challenges of new product forecasting, described above, applied to AMD's

²¹⁵ Deposition of John Docherty, July 22, 2016, pp. 134:22-135:2 ("A. It's a -- it's a forecast. People... use the best amount of information available to make that forecast at a point in time. And that's what that reflects. Very difficult to predict always the amount of down-coring you can do from every die.").

²¹⁶ Deposition of Lisa Su, July 13, 2016, p. 246:23-25 ("...when you have a new product in the marketplace, it's impossible to predict how fast or how slow it will sell.").

²¹⁷ Kahn, Kenneth B., "An Exploratory Investigation of New Product Forecasting Practices," *Journal of Product Innovation Management* 19, 2002, p. 136, ("The nature of these accuracies suggests that newer markets are more troublesome to forecast (i.e., market extensions, new category entries, and new-to-the-world products), than those situations where a current market is being served (i.e., cost improvements, product improvements, line extensions). While it may seem intuitive, these results suggest that it is not the product/technology, but rather the market/customer-base that impacts new product forecast accuracy.").

²¹⁸ "AMD Fusion APU Era Begins," AMD, Press Release, January 4, 2011; "Channel Support Geared up for First AMD Fusion Family of APUs," AMD, Press Release, December 16, 2010.

²¹⁹ Deposition of Rory Read, July 29, 2016 p. 113:11-20 ("And remember, this is really important, because you're introducing this concept of both a CPU and a GPU on a single chip. That's very different than what had been going, and we were doing it with this one at a much denser architecture, you know, technology, and now we were dramatically increasing the performance of both the graphics and CPU engine from where we were on Brazos, which was a much simpler, smaller chip. So this was a big change.").

projections of its APU products.²²⁰ Indeed, Llano, Brazos, and Trinity comprised an innovative new product category that offered a relatively complex value proposition, making accurate forecasting difficult.²²¹ Consumers' understanding of the value proposition of APUs required education²²² and was difficult to gauge in advance.²²³

81. Moreover, forecasting AMD's APU sales was more complicated than forecasting demand for a single chip because Brazos, Llano, and Trinity were actually product families rather than

²²⁰ Deposition of Lisa Su, July 13, 2016, p. 246:16-25 ("Q. (BY MS. VILLEGAS) And was the further development and the new information the fact that the company had yield issues and the channel received zero APU before December? A. ...when you have a new product in the marketplace, it's impossible to predict how fast or how slow it will sell.").

²²¹ Deposition of Lisa Su, July 13, 2016, p. 40:15-41:4 ("So what we were trying to do was introduce a, quote/unquote, new category. And, you know, APUs versus CPUs requires some education of end users, as well as partners... So at the time, you know, specifically around the first half of 2012, we were -- a lot of our focus was on, do people understand the value proposition for an APU? Why is an APU better than a CPU for any particular application?").

²²² Email from Guy Ferrante to Darren Grasby, copying Mark W. Jones and Derek Reaves, March 25, 2012 [AMD-003-000281986] ("...Chris Reichow, ASI, inferred there was confusion in the market place regarding APU from the Virtual Tech Expo – Below are a couple of the excerpts from the Live Virtual Chat that we conducted... Q. I hate to admit it but I am confused about the difference between a CPU and an APU. When building a system my rep was suggesting an APU but from what I read it really wasn't designed for business use. Was I wrong? A. The APU is designed for business use. With the APU architecture we have designed the processor to operate independent CPU and GPU power for your system. ..."); Email from Darren Grasby to John Byrne, May 10, 2012 [AMD-003-000284557] ("...Guy was at a MA Labs customer event last week he was presenting to 150 resellers and he asked the people in the room to raise their hands if they knew what APU was and they knew the technology..... [sic] not ONE person raised their hands."); Deposition of Lisa Su, July 13, 2016, p. 40:15-41:8 ("So what we were trying to do was introduce a, quote/unquote, new category. And, you know, APUs versus CPUs requires some education of end users, as well as partners... So at the time, you know, specifically around the first half of 2012, we were -- a lot of our focus was on, do people understand the value proposition for an APU? Why is an APU better than a CPU for any particular application? And we thought that the channel customers, because there are many, many more customers than the OEM business, required more education, more marketing in the area.").

²²³ Email from Rajesh Suman to Bertrand Coquard and Andrew Buxton, copying Suki Patel, May 18, 2012 [AMD-003-000286439] ("We are facing un-precedent head winds in terms of declining sales, margins and aged inventory that are severely impacting our profitability. The attached items were purchased over six months ago and we fully expected to sell these in line with your initial forecasts but due to a lack of product awareness, infra-structure cost, aggressive Intel positioning this has not materialised.").

single products, and each of those families came in multiple chip variants.²²⁴ AMD's forecasts therefore required projecting demand for a complex mix of products. Moreover, because APUs competed with AMD's other CPU and GPU products, forecasting AMD's microprocessor revenues and costs involved estimating not only APU sales, but simultaneous declines in AMD's other product sales as a result of cannibalization by APUs.

82. Figure 6 lists the different products sold by AMD in 2011-2012. AMD sold 18 different microprocessor sub-families, each of which had one to five brands. The aggregate sales from these brands varied significantly, ranging from net sales of negative \$4 million (returns) of Ballpeenhammer Turion to \$1.3 billion of net sales of Dachshund Athlon. The number of brands and models complicates the ability to forecast sales at the product level. Consistent with this difficulty, Ms. Lisa Su stated in her deposition, "I would say that whenever you're running a business of this complexity, you know, you're never going to call it exactly right. And so we sold less Llano in [Q4 2011] than we originally forecasted, and we made up for it with selling some other things in the quarter."²²⁵ Consistent with this product-level forecasting difficulty, while AMD developed internal forecasts at the product level, AMD and others in the microprocessor industry²²⁶ provided guidance at the *firm* level.

²²⁴ Deposition of Darren Grasby, June 22, 2016, pp. 66:2-67:13 ("Q. And there were different models of Llano; is that right? A. Yes. Yeah. Q. So there was an A4; is that right? A. Yep. Q. And then an A6? A. Yep. Q. And then an A8? A. Yes. ... Q. And there were also Llano chips with different amounts of cores in them; is that right? A. Correct, yeah. Q. So there were some chips that had 2 cores? A. Yeah. Q. Is that right? And some chips that had 3 cores? A. Yes. Q. And some chips that had 4 cores. A. Yes... Q. And at some point during the class period... AMD also manufactured Llano no GPUs; is that right? A. Correct, yes."); Deposition of Chris Cloran, August 25, 2016, p. 40:13-22 ("Q. Do you recall that Llano had different models, the A8, for example? A. Yes. Q. The A6? A. Yes. Q. The A4? A. Yes. Good, better, best. Q. That's right. Thank you. And the best being the A8? A. Yes.").

²²⁵ Deposition of Lisa Su, July 13, 2016, p. 164:19-24. *See also*, Deposition of Rory Read, July 29, 2016, p. 283:15-18 ("A. ... if you look at the overall mix of all the different components, you have to consider it as a portfolio of products.").

²²⁶ *See, e.g.*, "Intel Reports Second-Quarter Revenue of \$13.5 Billion," Intel, Press Release, July 17, 2012 ("Q3 2012 (GAAP, unless otherwise stated) Revenue: \$14.3 billion, plus or minus \$500 million. Gross margin percentage: 63 percent and 64 percent Non-GAAP (excluding amortization of acquisition-related intangibles), both plus or minus a couple of percentage points."); "NVIDIA Reports Financial Results for Second Quarter Fiscal Year 2012," Nvidia, Press Release, August 11, 2011 ("Our outlook for the third quarter of fiscal 2012 is as follows: Revenue is expected to be up 4 to 6 percent from the second quarter. GAAP and non-GAAP gross margins are expected to be flat."); "ARM Holdings Plc Reports Results for the

Continued on next page

Figure 6
Microprocessor Products and Brands
2011 – 2012
(\$ in thousands)

Product	Brand	Revenue	Product	Brand	Revenue	Product	Brand	Revenue
Brazos	E-Series	\$965,687	Llano 1	A-Series	\$858,310	Trinity 1	A-Series	\$411,949
Brazos	C-Series	\$177,278	Llano 1	Athlon	\$305,156	Trinity 1	Athlon	\$10,995
Brazos	Z-Series	\$3,013	Llano 1	E-Series	\$35,370	Trinity 1	Sempron	\$8
			Llano 1	Sempron	\$8,443	Trinity 2	A-Series	\$189,930
			Llano 2	A-Series	\$139,713			
			Llano 2	E-Series	\$17,940			
Product	Brand	Revenue	Product	Brand	Revenue	Product	Brand	Revenue
Ballpeenhammer	128U	-\$83	Dachshund	Turion	\$32,266	Lion	Turion	\$1,551
Ballpeenhammer	Sempron	-\$639	Dachshund	V-Series	\$19,573	Lion	Sempron	\$69
Ballpeenhammer	Athlon	-\$3,629	Deerhound	Athlon	-\$23	Orochi	FX	\$303,974
Ballpeenhammer	Turion	-\$3,980	Deerhound	Phenom	-\$761	Pharaoh	Phenom	\$207,089
Barton	Athlon	-\$52	Drillhammer	Athlon	\$288	Pharaoh	Athlon	\$42,257
Bloodhound	Athlon	\$487,903	Drillhammer	128U	-\$3	Ridgeback	Phenom	\$384,978
Bloodhound	Phenom	\$113,856	Drillhammer	Turion	-\$5	Ridgeback	Athlon	-\$38
Dachshund	Athlon	\$1,265,462	Drillhammer	Sempron	-\$1,063	Sledgehammer	Turion	\$133
Dachshund	Sempron	\$225,977	Jackhammer	Athlon	-\$136	Sledgehammer	Athlon	-\$34
Dachshund	Phenom	\$43,833	Lion	Athlon	\$1,904	Thoroughbred	Athlon	-\$67

Source: AMD sales data [AMD-028-002325474].

b. AMD Faced Supply-Related Forecasting Challenges

83. With respect to forecasting supply, AMD faced substantial uncertainty with respect to the ramp up of the production of its APU products (and the effect of that ramp on other products), as well as challenges posed by AMD's "fabless" production. In other words, AMD's performance (and ability to forecast) was dependent on GlobalFoundries executing on its commitments to AMD.

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Second Quarter and Half Year Ended 30 June 2012," ARM Holdings, Press Release, July 25, 2012 ("Relevant data for the second quarter, being the shipment period for ARM's Q3 royalties, points to a small sequential increase in industry revenues...However, building on our strong performance in the first half, we expect overall Group dollar revenues for full year 2012 to be in line with market expectations.").

84. In 2009, when AMD spun off GlobalFoundries, the parties entered into a Wafer Supply Agreement (“WSA”) which specified the volume of chips GlobalFoundries agreed to supply and the volume of chips AMD agreed to purchase, and the pricing methodology. Under the terms of the WSA, AMD agreed to purchase *all* of its microprocessor units and APU products from GlobalFoundries with limited exceptions.²²⁷ In addition, a cost-plus approach was utilized so that AMD paid for wafers regardless of the number of functional die they contained.²²⁸ In other words, AMD’s payment to GlobalFoundries was not tied to the number of good chips produced.

85. On April 2, 2011, AMD and GlobalFoundries negotiated an amendment to the original WSA (First Amended WSA).²²⁹ Instead of the cost-plus approach, AMD committed to purchase only good 32-nm die.²³⁰ Regarding the 32-nm die, AMD and GlobalFoundries agreed upon target yield curves and thus prime die target numbers for each quarter in 2011,²³¹ which AMD

²²⁷ AMD, 2011 Annual Report on Form 10-K, February 24, 2012, p. 13. (“At the closing of the transactions, we entered into a Wafer Supply Agreement (WSA), which governs the terms by which we purchase products manufactured by GF. Pursuant to the WSA, we are required to purchase all of our microprocessor unit and APU product requirements from GF with limited exceptions... We also have foundry arrangements with Taiwan Semiconductor Manufacturing Company (TSMC) for the production of certain graphics processors and chipsets, embedded processors, and APU products.”).

²²⁸ “Wafer Supply Agreement,” Advanced Micro Devices, Inc. and The Foundry Company, March 2, 2009 [AMD-001-000000117], p. 44; “Advanced Micro Devices Inc Conference Call to Discuss the Amendment of Wafer Supply Agreement (WSA) with GLOBALFOUNDRIES Inc.,” AMD, April 4, 2011, Deposition of Thomas Seifert, Exhibit 341, p. 3 (“Under the original WSA we have been paying GLOBALFOUNDRIES for wafers on a cost-plus basis.”).

²²⁹ “Wafer Supply Agreement Amendment No. 1,” Advanced Micro Devices, Inc. and GLOBALFOUNDRIES Inc., April 2, 2011 [AMD-003-000304859]; Deposition of Devinder Kumar, June 30, 2016, p. 226:16-23 [REDACTED]

²³⁰ “Advanced Micro Devices Inc. Conference Call to Discuss the Amendment of Wafer Supply Agreement (WSA) with GLOBALFOUNDRIES Inc.,” AMD, April 4, 2011, Deposition of Thomas Seifert, Exhibit 341, p. 3 (“AMD has committed to purchase a fixed number of 45 nanometer and 32 nanometer wafers per quarter in 2011 from GLOBALFOUNDRIES. First, we’ll pay GLOBALFOUNDRIES a fixed price for 45 nanometer wafers delivered in 2011. Second, we’ll only pay GLOBALFOUNDRIES for good 32 nanometer die.”).

²³¹ “Wafer Supply Agreement Amendment No. 1,” Advanced Micro Devices, Inc. and GLOBALFOUNDRIES Inc., April 2, 2011, [AMD-003-000304859], Schedule D, Item 4.

committed to purchase from GlobalFoundries.²³² Although the WSA amendment incentivized GlobalFoundries to maximize the quantity of good die produced, uncertainty remained as to whether GlobalFoundries could meet its supply commitments.

86. Moreover, given the structure of the First Amended WSA, supply uncertainty resulted in further uncertainty about production *costs*. [REDACTED]

[REDACTED]³³ The WSA was subsequently amended again on March 4, 2012, such that, in 2012, AMD paid GlobalFoundries by the wafer, not by good die.²³⁴ Given uncertainty regarding the amount of good (salable) die, as well as the breakdown between prime and non-prime functional die GlobalFoundries would be able to provide, AMD did not know in advance how many chips the quarterly fixed payments would be spread across. Because of these unknowns, there was uncertainty about the realization of costs per chip or per product line (e.g., Llano).

87. These inherent difficulties in forecasting Llano supply and costs during the Class Period, accompanied by substantial difficulties in forecasting Llano demand (as is demonstrated throughout this report and as explained in Section V.C.2.a., above), meant that it was difficult for AMD to accurately forecast its revenues (i.e., its demand or product sales), and was even *more* difficult for AMD to accurately forecast its gross margin (a value that depended upon both an accurate revenue forecast, and an accurate cost forecast).

²³² “Wafer Supply Agreement Amendment No. 1,” Advanced Micro Devices, Inc. and GLOBALFOUNDRIES Inc., April 2, 2011 [AMD-003-000304858-59], Schedule D, Items 2 and 6.

²³³ “Wafer Supply Agreement Amendment No. 1,” Advanced Micro Devices, Inc. and GLOBALFOUNDRIES Inc., April 2, 2011 [AMD-003-000304834, AMD-003-000304859], Section 3.4(a) and Schedule D, Item 3.

²³⁴ “Wafer Supply Agreement Amendment No. 2,” Advanced Micro Devices, Inc. and GLOBALFOUNDRIES Inc., March 4, 2012 [AMD-001-000000209], Section 2(a)(vi).

VI. AMD's Forecast Misses in Q2 2012 and Q3 2012 Were Consistent with Changes in Macroeconomic and Industry Conditions

88. In their Complaint, Plaintiffs allege that, as a result of Llano manufacturing problems in 2011, AMD experienced a supply shortage of Llano and allocated Llano products to OEM customers over channel customers.²³⁵ Plaintiffs allege that AMD's 2011 "decision to allocate Llano to the OEM's over the channel" had "negative effects ... on channel adoption and the Company's business."²³⁶ According to Plaintiffs, "AMD's failure to timely supply the channel with Llano product was fatal to Llano's success and had a domino effect"²³⁷ that resulted in reduced channel demand for Llano products and AMD missing its guidance in Q2 2012 and Q3 2012.²³⁸ Plaintiffs' allegations have since shifted. Plaintiffs now allege that AMD's 2011 supply shortage of Llano resulted not only in reduced sales to channel customers in 2012, but also to OEMs, "whose own sales targets were imperiled by the chronically unreliable and ever-constrained Llano supply."²³⁹ According to Plaintiffs, because AMD had an "inadequate supply of Llano in 2011," AMD missed its Q2 2012 and Q3 2012 guidance due to "poor channel sales in China and Europe and weak consumer demand in the OEM business."²⁴⁰

89. Plaintiffs have presented *no proof* that substantiates these allegations. As an initial matter, contrary to their allegations, and as discussed below in Section VI.A., AMD's decision to allocate Llano product to OEM customers over channel customers in 2011 was reasonable. Moreover AMD's sales data does not support Plaintiffs' hypothesis that the allocation decision led to AMD missing its forecasts in Q2 2012 or Q3 2012.

²³⁵ Complaint ¶¶15, 144.

²³⁶ Lead Plaintiffs' Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.'s First Set of Interrogatories, August 12, 2016, p. 26.

²³⁷ Complaint, ¶16.

²³⁸ See, e.g., Lead Plaintiffs' Supplemental Objections and Responses to Defendant Dr. Lisa T. Su's First Set of Interrogatories, November 28, 2016, pp. 18:18-20:27; Complaint, ¶¶ 272-3, 279-80; Coffman Report, ¶107.

²³⁹ Lead Plaintiffs' Second Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.'s First Set of Interrogatories, November 28, 2016, p. 132:13-14.

²⁴⁰ Coffman Report, ¶¶ 9, 97-98.

90. Furthermore, Plaintiffs have not cited evidence substantiating their claim that Llano supply constraints in 2011 led to AMD missing its Q2 2012 or 3Q 2012 guidance. In fact, as discussed in Section VI.B., below, AMD's forecast misses in Q2 and Q3 2012 were more likely driven by significant changes in the PC industry combined with inherent characteristics of AMD's microprocessor sales, which resulted in substantial difficulties in AMD being able to forecast its demand.

91. In particular, during 2012, the PC market deteriorated as a result of global macroeconomic conditions and the shift to handheld devices. In addition to significantly changing market conditions, AMD's ability to accurately forecast its sales was impacted by certain challenges, including: (i) new product forecasts (like forecasts for Llano) are particularly prone to error, as discussed in Section V, above; (ii) the microprocessor market is inherently volatile;²⁴¹ (iii) Intel, the dominant supplier, competed aggressively in the face of a declining PC market; and (iv) AMD's sales—particularly in the channel—were back-end loaded.²⁴²

92. These factors affected demand for Llano, and for AMD's products more generally, in Q2 2012 and Q3 2012. The revenue shortfalls in these quarters cannot be attributed to the effect of Llano supply constraints in 2011.

A. ALLOCATION OF LIMITED LLANO INVENTORY TO OEMs WAS REASONABLE AND DID NOT RESULT IN AMD MISSING ITS Q2 2012 OR Q3 2012 FORECASTS

93. Plaintiffs allege that AMD's 2011 "decision to allocate Llano to the OEMs over the channel" had "negative effects... on channel adoption and the Company's business."²⁴³ Specifically, Plaintiffs allege that AMD's 2011 allocation decision resulted in weak channel demand that was "fatal to Llano's success,"²⁴⁴ and "drove" the Q2 2012 and Q3 2012 guidance

²⁴¹ "Americas: Technology: Semiconductors," *Goldman Sachs*, July 18, 2011 [AMD-021-002258211], p. 1 ("While we acknowledge the potential for 3Q upside to our estimates, we remain guarded on 2H11 as our industry discussions suggest low demand visibility and high volatility.").

²⁴² See Figure 23 through Figure 26.

²⁴³ Lead Plaintiffs' Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.'s First Set of Interrogatories, August 12, 2016, p. 26.

²⁴⁴ Complaint, ¶¶15-16.

misses.²⁴⁵ As discussed below, the evidence does not substantiate Plaintiffs' claim that the Llano supply shortage, and AMD's decision to allocate Llano predominantly to OEMs, caused or "drove" the Q2 2012 and Q3 2012 misses. To the contrary, the evidence demonstrates that: (i) Llano sales to the channel increased significantly from 2011 to 2012, and there is no systematic pattern indicating customers who did not receive large amounts of Llano in Q3 2011 did not purchase large amounts of Llano in Q2 and Q3 2012; (ii) channel sales were not characterized by significant back-to-school or holiday seasons; and (iii) AMD's sales data does not suggest that AMD's channel customers skipped over Llano in favor of waiting for Trinity in 2012.

1. Allocation of limited Llano inventory to OEMs was reasonable

94. AMD's decision to allocate products to OEM customers was strategic and included the consideration of the future potential of larger customers in the market.²⁴⁶ With regard to Llano specifically, AMD allocated products to OEM customers because it determined that, as the market shifted away from desktops to notebooks, smaller OEM customers were likely to "get squeezed and pushed out of the market," leaving "worldwide" OEMs and OEMs with notebook offerings more likely to be successful in the future marketplace.²⁴⁷ [REDACTED]

[REDACTED]

[REDACTED]

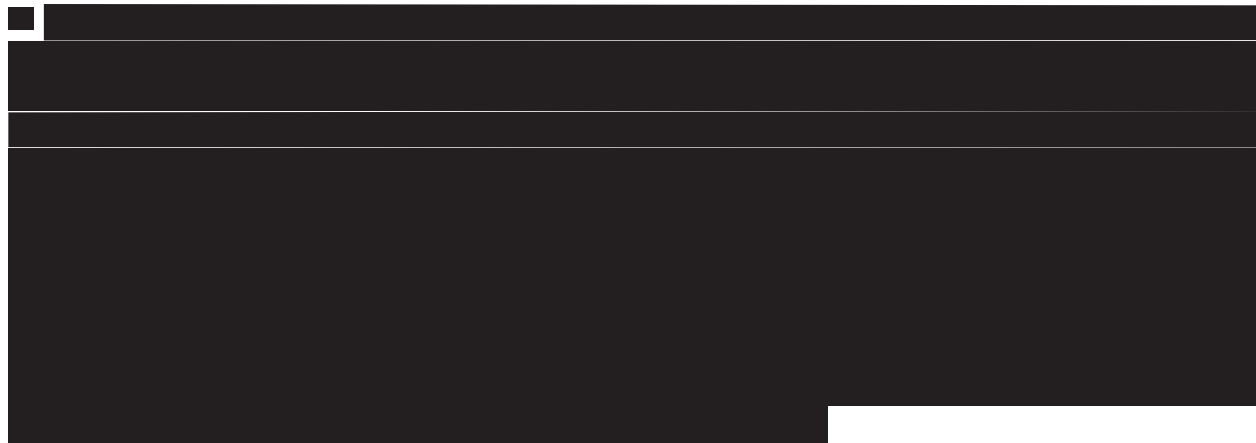
²⁴⁵ Coffman Report, ¶¶107, 127.

²⁴⁶ Deposition of Emilio Ghilardi, October 25, 2016, p. 133:11-22 ("A. A typical example. We have seen in the last decade the PC market contracting the last five years, but more important, the biggers get bigger over time. So as you plan how to allocate products in a moment of more demand and supply, you want to prioritize the ones you believe will continue to be successful in the marketplace... Q. And so with regard to the longer-term view, you would choose to supply more heavily those you thought would be bigger players in the future? A. Correct."); p. 231:1-5 ("Because of the criticality for AMD of the success of the APU... I believed the right decision to prioritize the availability of this specific component for global players versus optimize the short-term profitability...").

²⁴⁷ Deposition of Emilio Ghilardi, October 25, 2016, p. 135:6-22, ("Q. So with regard to Llano specifically, it was more important that AMD supply their more strategic customers than maximize the profit that could be made during that quarter or during the next two quarters? A. Yes. ... Point No. 1, market is going toward notebook, away from desktop. Point No. 2, market is constantly changing, the biggers get bigger. The local OEMS get squeezed and pushed out of the market. They are already desktop only ... You know they are not going to be long-term winners in this market. So you have limited quantity of supplies available, you give it to the ones that are notebook players, ... worldwide OEMs; ... that you believe are going to be the winners in the future.").

██████ This approach was reasonable given AMD’s view regarding the long-term market prospects of these OEM customers.²⁴⁹

95. Moreover, contrary to Plaintiffs’ allegation, AMD often released the same products to OEM and channel customers in different time periods.²⁵⁰ The fact that AMD released Llano to the channel after its OEM customers was not unusual. For example, AMD released its Trinity APU to OEM customers in May 2012, before releasing it to channel customers in October 2012.²⁵¹ As shown in Figure 7, AMD sold Brazos, Llano, and Trinity primarily to OEMs in their



²⁴⁹ Deposition of Emilio Ghilardi, October 25, 2016, p. 143:11-20 (“A. ... So you end up having HP, Dell, Lenovo, much less Acer, that’s pretty much it on desktop. So when you decide about allocating desktop, Llano, you fundamentally have maybe three worldwide MNCs, which happen to be the ones you expect to win long term, and then you have the small guys that have been squeezed and will continue to get squeezed, most of them will actually disappear from the market. So that’s the type of consideration you have to make.”).

²⁵⁰ See e.g., “2012 Desktop Transition Plan,” AMD, September 26, 2011 [AMD-005-000844106], p. 3 (“OEM: Launching Brazos 2.0 in 2C 12, Channel: Launching Brazos 2.0 in 2Q 12”, “OEM: Launching Volan/Vishera in 3C 12, Channel: Launching Volan/Vishera in 3Q 12”).

²⁵¹ “Second-Generation AMD A-Series APUs Enable Best-in-Class PC Mobility, Entertainment, and Gaming Experience in Single Chip,” AMD, Press Release, May 15, 2012 (“AMD (NYSE:AMD) today announced the widely anticipated launch of its 2nd-Generation AMD A-Series Accelerated Processing Units (APUs) for mainstream and ultrathin notebooks, All-in-One and traditional desktops, home theater PCs and embedded designs. The 2nd-Generation A-Series APU, codenamed “Trinity”, is a ground-up improved design over the previous generation... AMD has a record number of design wins with companies like Acer, Asus, HP, Lenovo, Samsung and Toshiba based on our 2nd-Generation AMD A-Series APUs and VISION Technology from AMD, with mainstream and ultrathin notebooks as well as embedded solutions, available beginning today. ... Desktop systems and component channel parts will be available later this year.”); “New AMD A-Series Processors Bring Faster Speeds, High Core Count and AMD Radeon

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first launch month, and channel sales continued to represent only a small fraction of sales for each product line through the first six months after launch. AMD prioritized OEM sales for Trinity and Brazos even though the launch of these product families was not affected by the same supply issues AMD faced with Llano.

Figure 7
OEM Sales as a Percent of Total Microprocessor Sales
First Six Months after Launch

	Launch Month	Month 2	Month 3	Month 4	Month 5	Month 6
Brazos	100.0%	99.9%	99.5%	100.0%	98.9%	98.8%
Llano	88.7%	99.0%	86.0%	75.6%	86.0%	84.8%
Trinity	-	100.0%	100.0%	99.8%	98.2%	86.0%

Note: Brazos, Llano, and Trinity officially launched on 1/4/2011, 6/14/2011, and 5/15/2012 respectively. Trinity's launch month is excluded due to net negative sales.²⁵²

96. Moreover, as discussed in Section V, available supply of a newly launched product may not meet demand during the ramp-up process. Consequently, firms launching new products may be in the position of having to allocate existing supply among their customers. In the semiconductor industry in particular, it is not uncommon for customers to receive less of a product than they would otherwise choose to purchase.²⁵³

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HD 7000 Series Graphics to Do-It-Yourself PC Enthusiasts and Gamers,” AMD, Press Release, October 2, 2012 (“AMD (NYSE:AMD) today announced retail and distribution channel availability of its second generation AMD A-Series Accelerated Processing Units (APUs) for desktop, small form-factor and home theater PCs.”).

²⁵² “AMD Fusion APU Era Begins,” AMD, Press Release, January 4, 2011; “AMD Ushers in Next Generation of Computing with AMD A-Series APUs,” AMD, Press Release, June 14, 2011; “Second-Generation AMD A-Series APUs Enable Best-in-Class PC Mobility, Entertainment, and Gaming Experience in Single Chip,” AMD, Press Release, May 15, 2012.

²⁵³ See, e.g., Clarke, Peter, “Wafer prices, allocation up in Q1, says GSA,” *EETimes*, June 10, 2010 (“Of the 99 companies that answered the question asking if they were receiving the number of wafers they requested, 30 responded that they were not. The proportion of their requested wafers varied between 90 percent and 30 percent, the peak response was 9 companies who said they were being allocated 80 percent

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2. **Llano Sales Increased Significantly from 2011 to 2012 and the Evidence Does Not Substantiate a Systematic Pattern Indicating Customers Who Did Not Receive Large Amounts of Llano in Q3 2011 Did Not Purchase Large Amounts of Llano in Q2 and Q3 2012**

97. Dr. Thompson alleges that the 2011 Llano yield issues “damaged AMD and Llano brand credibility with motherboard manufacturers and OEM and Channel customers.”²⁵⁴ The evidence does not substantiate this claim.

98. Figure 8 below shows that AMD’s Llano channel sales increased substantially from 2011 to 2012. In fact, Llano sales to the channel peaked in Q1 2012 and continued at substantial levels throughout 2012.

Continued from previous page

of their requested capacity.”); *See also* Souza, Crista “... as Intel processor shortage pinches OEM earnings,” *EETimes*, January 28, 2000.

²⁵⁴ Thompson Report, ¶ 20.

Figure 8
Llano Sales by Customer Type and by Region
2011 - 2012
(\$ in thousands)

OEM	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012
Asia-Pacific	\$86	\$13,054	\$14,521	\$21,166	\$18,207	\$8,188	\$2,627	-\$232
Europe-Middle East-Africa	\$0	\$10,548	\$18,149	\$15,073	\$3,294	\$4,295	\$1,173	\$733
Greater China	\$0	\$44,743	\$144,234	\$217,634	\$172,593	\$89,163	\$10,490	\$15,072
Latin America	\$0	\$45	\$366	\$2,808	\$1,403	\$3,036	\$2,454	\$378
North America	\$0	-\$2	\$2,273	\$9,533	\$7,719	\$11,244	\$2,008	\$374
Not assigned	\$0	-\$4	\$95	-\$522	-\$5,171	-\$3,589	\$8,848	-\$2,421
Total OEM	\$86	\$68,384	\$179,637	\$265,692	\$198,045	\$112,337	\$27,601	\$13,903
Channel	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012
Asia-Pacific	\$0	\$1,109	\$3,021	\$5,096	\$10,471	\$7,366	\$7,165	\$984
Europe-Middle East-Africa	\$0	\$3,389	\$13,038	\$22,604	\$15,277	-\$7,638	\$18,316	\$10,077
Greater China	\$0	\$598	\$27,340	\$59,893	\$107,292	\$58,430	\$70,735	\$50,476
Latin America	\$0	\$74	\$946	\$1,268	\$3,648	\$4,703	\$2,558	\$2,442
North America	\$0	\$1,812	\$4,648	\$12,180	\$2,876	-\$1,109	\$4,304	-\$386
Not assigned	\$0	\$0	-\$11,547	-\$3,526	-\$17,928	\$14,528	-\$6,891	-\$393
Total Channel	\$0	\$6,982	\$37,445	\$97,516	\$121,635	\$76,280	\$96,188	\$63,200
Total OEM and Channel	\$86	\$75,366	\$217,083	\$363,208	\$319,680	\$188,617	\$123,789	\$77,103

Source: AMD sales data [AMD-028-002325474].

99. This increase was particularly remarkable given that, as shown in Figure 9, AMD's non-Llano sales *decreased* significantly from 2011 to 2012. Reasons for this decline in AMD's sales are discussed in Section VI.B.

Figure 9
Non-Llano Sales by Customer Type and by Region
2011 – 2012
(\$ in thousands)

OEM	2011	2012	% of Total OEM	% of Total	Change from 2011 to 2012	Change from 2011 to 2012
Asia-Pacific	\$219,211	\$183,258	15%	8%	-\$35,953	-16%
Europe-Middle East-Africa	\$73,383	\$36,439	4%	2%	-\$36,943	-50%
Greater China	\$959,555	\$932,883	70%	39%	-\$26,672	-3%
Latin America	\$56,182	\$39,479	4%	2%	-\$16,702	-30%
North America	\$128,783	\$73,843	8%	4%	-\$54,940	-43%
Not assigned	-\$9,793	\$5,234	0%	0%	\$15,027	-153%
Total OEM	\$1,427,320	\$1,271,136	100%	55%	-\$156,184	-11%

Channel	2011	2012	% of Total Channel	% of Total	Change from 2011 to 2012	Change from 2011 to 2012
Asia-Pacific	\$166,638	\$92,163	12%	5%	-\$74,475	-45%
Europe-Middle East-Africa	\$403,013	\$233,950	29%	13%	-\$169,063	-42%
Greater China	\$648,509	\$252,977	41%	18%	-\$395,532	-61%
Latin America	\$122,700	\$69,596	9%	4%	-\$53,104	-43%
North America	\$183,630	\$112,344	14%	6%	-\$71,285	-39%
Not assigned	-\$59,796	-\$44,722	-5%	-2%	\$15,073	-25%
Total Channel	\$1,464,695	\$716,308	100%	45%	-\$748,387	-51%
Total OEM and Channel	\$2,892,015	\$1,987,444		100%	-\$904,571	-31%

Source: AMD sales data [AMD-028-002325474].

100. Furthermore, contrary to Plaintiffs' allegations, AMD sales data also indicate that the majority of channel customers who received less Llano in Q3 2011 actually purchased more Llano in Q2 and Q3 2012. Thus, analysis of AMD's quarterly sales to its channel customers fails to provide any support for Plaintiffs' claim that Q3 2011 Llano supply issues resulted in AMD missing its guidance in Q2 2012 or Q3 2012. Rather, as shown in Figure 10, Llano sales to AMD's top ten channel customers (as ranked by the total combined revenues in 2011 and 2012) increased considerably in 2012. This is in direct opposition to Plaintiff's hypothesis regarding the causal relationship between Llano availability in Q3 2011 and sales in 2012.²⁵⁵

²⁵⁵ During AMD's Q2 2012 earnings conference call, Mr. Read stated, "Looking back, when we were significantly 32-nanometer supply constrained last year, we prioritized shipments of Llano to our OEM

Continued on next page

Figure 10
Llano Sales by Largest Channel Customers
Q3 2011 - Q3 2012
(\$ in thousands)



101. More specifically, if Plaintiffs' allegation was true, there would be a high correlation between a customer's Q3 2011 purchases and their Q2 or Q3 2012 purchases, *i.e.*, channel customers who purchased little Llano in Q3 2011 (because, according to Plaintiffs' allegations, AMD did not have enough supply to sell them any Llano) would also purchase few Llano chips in Q2 2012 and Q3 2012 (because, according to Plaintiffs' allegations, AMD's relationships with these customers were damaged or because they moved on to focus on the Trinity product). This

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customers. As a result, channel partners saw a dramatic change in supply linearity and a misalignment with motherboard availability. This clearly impacted Llano sales and built inventory in the channel." AMD, Q2 2012 Earnings Conference Call (Rory Read), July 19, 2012, p. 3. Plaintiffs allege that Mr. Read's statement "revealed ... that AMD's botched rollout of Llano to the channel market, *i.e.*, its failure to timely supply the channel with product, led to weak channel adoption that negatively impacted AMD's business." Complaint, ¶ 262. I express no view on what Mr. Read meant or knew at that time, but do note that his statement was delivered during the first few weeks of a longer-term PC industry shift, which was not visible at that time, as I explain throughout Section VI.B. Moreover, as I have explained throughout Section VI, the evidence does not substantiate a causal link between the 2011 Llano supply shortage and the Q2 2012 forecast miss.

hypothesized pattern is not demonstrated by the data. In Figure 11 each data point represents a customer who purchased Llano either in Q3 2011 or Q2 2012. Figure 11 shows each Llano customer's Q3 2011 Llano purchases (X axis) plotted against their Q2 2012 Llano purchases (Y axis). Similarly, Figure 12 shows, for each customer that purchased Llano either in Q3 2011 or Q3 2012, the customer's Q3 2011 Llano purchases (X axis) plotted against their Q3 2012 Llano purchases (Y axis).

102. Contrary to Plaintiffs' theory, Figure 11 and Figure 12 show that some customers whose Llano purchases in Q3 2011 were relatively modest made large purchases of Llano chips in Q2 2012 and Q3 2012. [REDACTED]

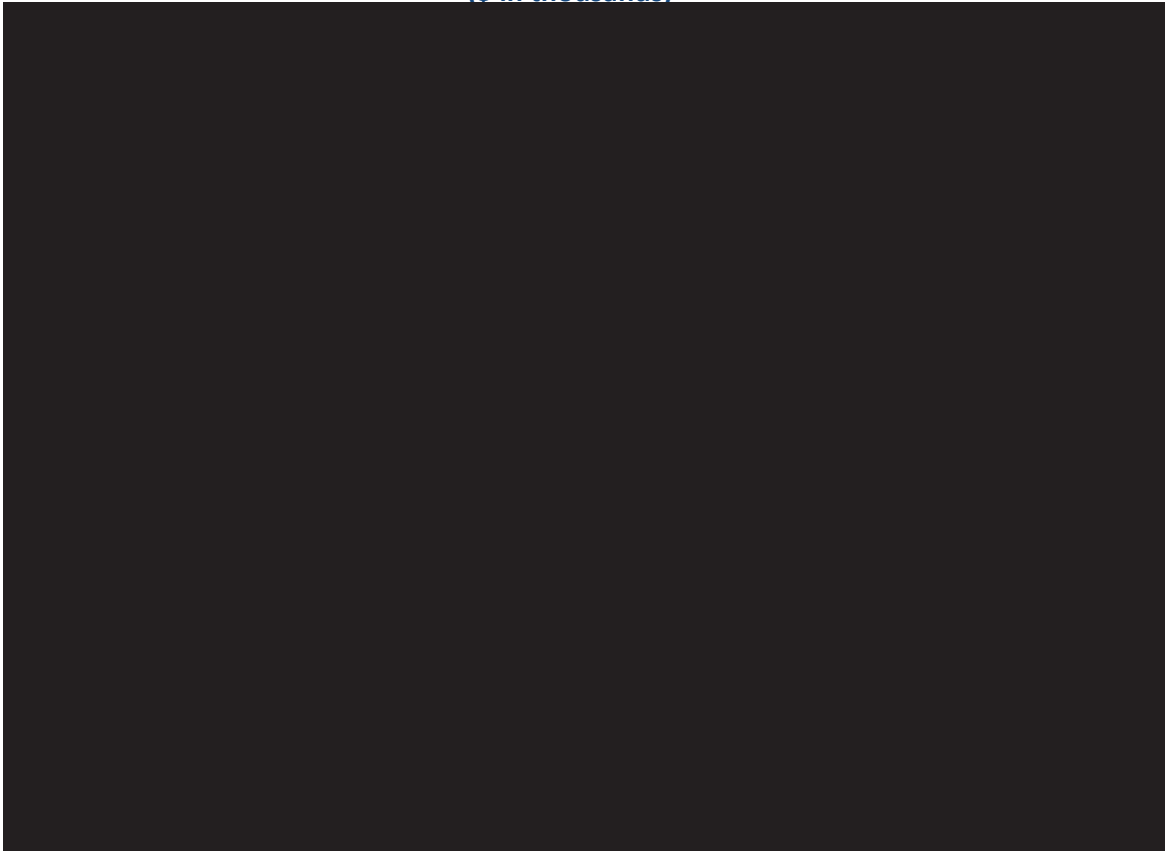
[REDACTED] Across all of AMD's channel customers, 71 percent purchased more Llano in Q2 2012 than they did in Q3 2011. Across all of AMD's channel customers, 67 percent purchased more Llano in Q3 2012 than they did in Q3 2011. Among the top twenty channel customers, who together accounted for almost all of AMD's Llano channel sales, 85 percent purchased more Llano in Q3 2012 than they did in Q3 2011.

103. In addition, some channel customers whose Llano purchases in Q3 2011 were relatively substantial made no purchases of Llano chips in Q2 2012 and Q3 2012.²⁵⁶ [REDACTED]

²⁵⁶ These channel customers may simply not have been able to sell the Llano they had acquired in previous quarters. See, e.g., Email from Eugene Kiang [channel customer] to Darren Grasby, copying John Byrne, Mark W. Jones, Derek Reaves, and Guy Ferrante, May 23, 2012 [AMD-003-000263364] ("As you know, we started to push the A3400 APU last October...Throughout the past eight months we have been working hard to promote the APU to all of our customers. We've tried everything we know of to build up the run rate. After such an earnest effort, I'm sad to report that our struggle has not yielded the results we were hoping for. As we approach end of May, I still have over 143k units left in inventory...With the current market conditions, it is impossible for me to liquidate the remaining parts fast enough to meet their demands; I have run out of time. I very much regret to inform you that I have no choice but to ask for a return on the A3400 trays."). See also, Email from David Kenyon to Mark W. Jones, Ernie Diaz, Darren Grasby, John Torres, Chris Winiewicz, John Taylor, Monica Behncke, Darren McPhee, Martin Johnson, Leslie Sobon, Chris Cloran, Jack Huynh, and Annie Flaig, copying John Byrne, May 22, 2015 [AMD-007-000892389-90] ("Wanted to send a brief summary of the notes from visits to Toshiba, Ingram Micro, Cyberpower/IBuyPower and NewEgg from last week...Ingram Micro - We spent time on four

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Figure 11
Llano Purchases by Channel Customers
Q3 2011 vs. Q2 2012
(\$ in thousands)



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major areas:...Their feedback on APU was that three issues were inhibiting sellout: 1) no one knows what an APU is, 2) BOM cost/product cost is much higher than previous generation and 3) stigma is now created that this product won't sell...CyberPower/IBP – ...Struggles with where to position APU in the stack (Away from enthusiasts and gamers) and the perception that APU based desktops won't compete against MNC machines powered by the same chip at much lower costs...NewEgg – We spent the first 90 minutes of this 2.5 hr session on APU, the issues and challenges they've had selling the product.”). *See also*, Email from Orlovs Aleksandrs to Andrew Buxton, Bertrand Coquard, and Neil Spicer, copying Ilja Stakanovs and Irina Guseva, February 24, 2012 [AMD-003-000280383] (“The problem is with APU which is not moving at all. On market are still available Athlons and we cannot compete with the APU. Solution what I see to achieve targets: allocate Athlons NOW. And to solve APU selling problem – you have to revise pricing.”).



Figure 12
Llano Purchases by Channel Customers
Q3 2011 vs. Q3 2012
(\$ in thousands)



104. Nor does the evidence indicate that channel customers who did not receive large amounts of Llano in Q3 2011 reduced their overall AMD microprocessor purchases in Q2 2012 and Q3 2012, as would be the case if the Llano supply issues damaged AMD's relationships with channel

customers. A simple linear regression shows no statistically significant average effect of a channel customer's Q3 2011 Llano purchase on their year-over-year growth in purchases of all AMD microprocessor products in Q2 2012 and Q3 2012. Similarly, while Mr. Coffman and Dr. Thompson make the vague claim that AMD's 2011 supply problems "hurt [OEM customer] Llano demand,"²⁵⁷ the evidence does not support their opinions. [REDACTED]

[REDACTED] In short, AMD's sales patterns are simply inconsistent with Mr. Coffman's and Dr. Thompson's opinions, and with Plaintiffs' allegations.

3. Channel sales in 2011 and 2012 were not characterized by "back-to-school" or "holiday" seasons

105. Dr. Thompson claims that Llano supply shortages caused "significant demand to perish" because channel customers did not receive substantial Llano products during the 2C (back-to-school) and 3C (holiday) sales cycles.²⁶¹ Plaintiffs similarly alleged in their Complaint that

²⁵⁷ Thompson Report, ¶¶ 129-32, 161; Coffman Report, ¶¶ 54-55.

²⁵⁸ Coffman Report, ¶56.

[REDACTED]; *See also* Deposition of Tony Prophet, August 12, 2016, p. 132:9-16 ("Q. ... During this time period do you recall extreme pressure between HP and AMD ... on their relationship? A. I would char—okay, speaking for myself, I would characterize their relationship as – and again, it's hard to nail down the exact which quarter of which year, but generally during this arc of time as a good relationship and generally strong."); p. 239:3-15 ("Q. Okay. And so it's fair to say then that the relationship between HP and AMD is larger than any one particular product? A. Or any point in time, yes. Q. Okay. And each purchasing decision that HP makes is based on a number of factors that include the price and function of a given product? A. Among other -- among other factors, yes. Q. Do you recall believing at any point in time that the relationship between HP and AMD was irreparably harmed as a result of some of the supply issues we've been discussing today? A. No."). Other OEMs also purchased more Llano in Q4 2011 than they purchased in Q3 2011. [REDACTED]

²⁶¹ Thompson Report, ¶20.

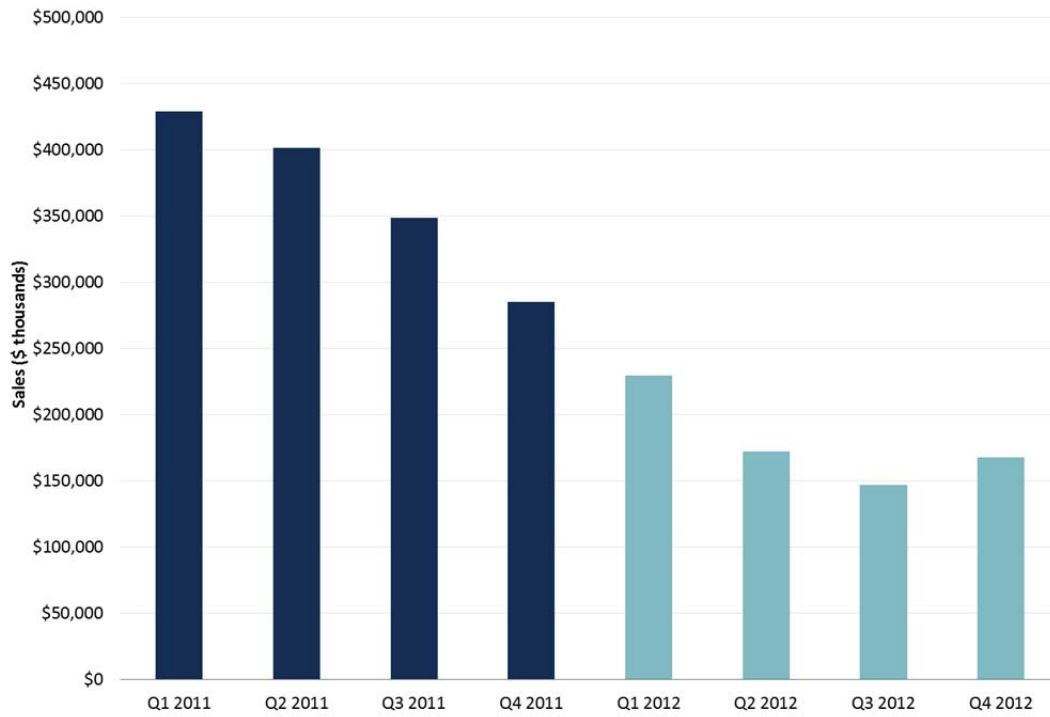
“because of the [Llano] yield problems,” AMD allocated its Llano chips to its OEM customers in 2011, and therefore, “AMD had missed out on channel sales for the lucrative back-to-school and holiday selling seasons entirely.”²⁶² However, Plaintiffs’ and Dr. Thompson’s allegations are predicated on a fundamental lack of understanding of AMD’s sales patterns, as AMD’s channel sales were not characterized by back-to-school or late winter holiday seasons.²⁶³

106. Figure 13 through Figure 16 show Llano and non-Llano sales to OEM and channel customers in 2011 and 2012. Figure 13 and Figure 14 show non-Llano channel sales because Llano channel sales were allegedly impacted by AMD’s supply chain issues, and therefore Llano sales would not be representative of normal seasonal sales patterns. Figure 15 and Figure 16 show Llano for comparison purposes. None of these figures show a distinct pattern of back-to-school or holiday seasons during which AMD earned a disproportionate amount of revenue.

²⁶² Complaint, ¶15; Lead Plaintiffs’ Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.’s First Set of Interrogatories, August 12, 2016, p. 26:17-19 (“Indeed, in September 2011, AMD continued to allocate the Llano chips available to the OEM customers, meaning the channel would have virtually no Llano for the important third sales cycle of the year, the winter holiday season.”); Thompson Report, ¶180 (“OEM and Channel customers being short Llano parts for most of 2011, severely impacting the 2011 back to school and holiday selling seasons and causing significant demand to perish;”).

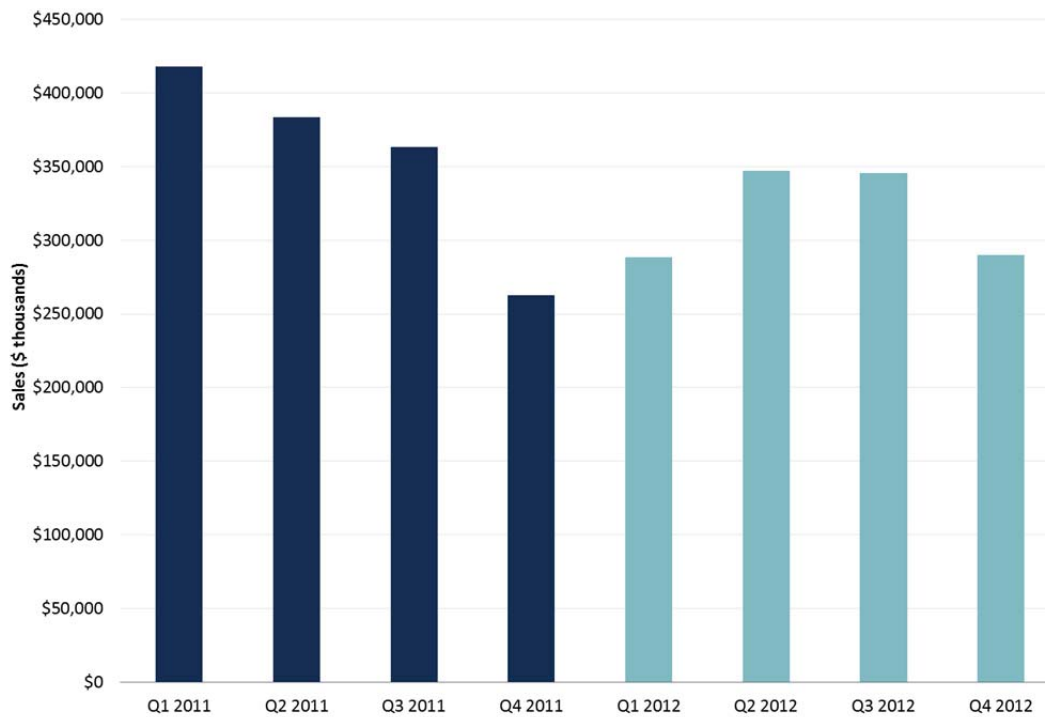
²⁶³ Deposition of John Zucker, July 19, 2016, p. 219:13-20 (“A. ... What I was saying on channel is that the channel is less apt to follow the back-to-school and 2C/3C cycles and the 1C cycle. They – that’s Chinese New Year, I think. They will do it any time they want, or the kind of Tier 2 guys or the tablet guys. That’s more of a consumer product than it is a back-to-school product, so they don’t follow the typical PC OEM cycle.”); Deposition of Darren Grasby, June 22, 2016, p. 78:14-18 (“Q. Would you agree with me, though, that the back to school and holiday are important selling seasons for AMD? A. Again, for my part of the business they’re not critical.”); p. 77:24-78:3 (“Q. So in terms of chip sales, are back to school and holiday seasons the most important selling seasons? ... A. No. No. They’re busy seasons for us, but they’re -- they’re not critical to our business, no.”); p. 79:11-14 (“Q. Did you ever deal with back-to-school sales with your customers? A. Back-to-school sales would be discussed, but it was a tiny fraction of our business.”).

Figure 13
Non-Llano Sales to Channel Customers by Quarter
2011 - 2012



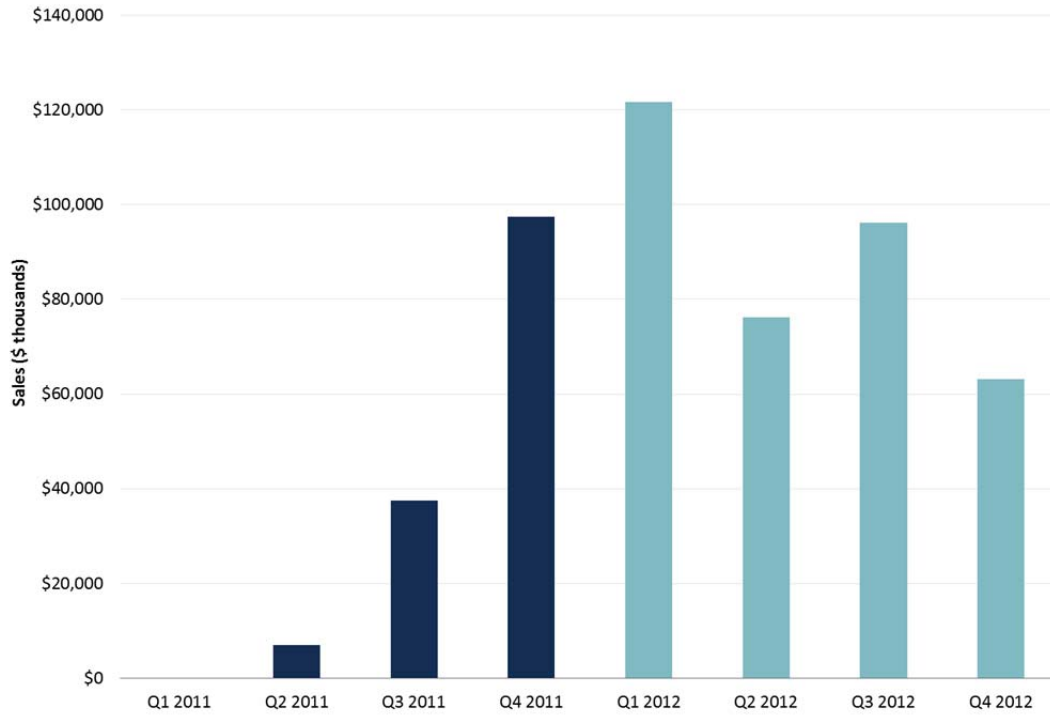
Source: AMD sales data [AMD-028-002325474].

Figure 14
Non-Llano Sales to OEM Customers by Quarter
2011 - 2012



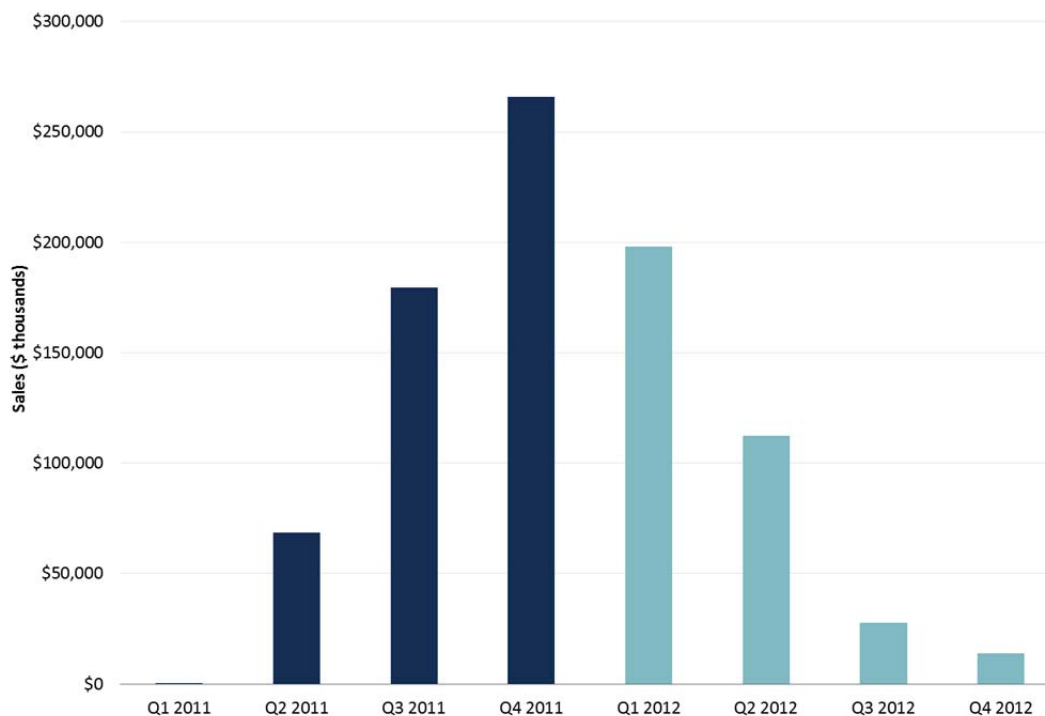
Source: AMD sales data [AMD-028-002325474].

Figure 15
Llano Sales to Channel Customers by Quarter
2011 - 2012



Source: AMD sales data [AMD-028-002325474].

Figure 16
Llano Sales to OEM Customers by Quarter
2011 - 2012



Source: AMD sales data [AMD-028-002325474].

4. AMD's Customers Did Not Skip Llano and Move on to Trinity

107. Dr. Thompson claims that “the life cycle of a computer chip during this time frame was about one year to 18 months.”²⁶⁴ As such, Dr. Thompson states that “Llano was clearly in its ramp-down, end-of-life phase of production” by early 2012.²⁶⁵ Plaintiffs similarly allege in their Complaint that “by the time AMD was actually able to supply the channel” with Llano chips in

²⁶⁴ Thompson Report, ¶156.

²⁶⁵ Thompson Report, ¶156.

December 2011 and 2012, AMD's channel customers "had moved on from Llano" and "[were] focused on AMD's next generation Trinity."²⁶⁶

108. Contrary to Plaintiffs' allegations, AMD's channel customers did not seem to "move on from Llano" in favor of Trinity in 2012. Figure 17 shows that AMD's channel customers purchased approximately two and a half times as much Llano product in 2012 as they did in 2011. Moreover, channel customers in Q2 and Q3 2012 did not drop Llano in favor of waiting for Trinity to become available for their purchase in Q4 2012. Finally, although Trinity was made available to the channel in volume by early Q4 2012,²⁶⁷ channel customers' purchases of Llano exceeded those of Trinity in that quarter.

²⁶⁶ Complaint, ¶21 ("Rather, because of the delayed availability, and in the context of a one-year lifecycle for a microprocessor like Llano, by the time AMD was actually able to supply the channel with product, the industry had moved on from Llano and was focused on AMD's next generation Trinity.") *See also*, Complaint, ¶16 ("Indeed, once AMD and GlobalFoundries resolved the production problems and AMD finally began to supply the channel with Llano processors in volume, vendors had already moved on from Llano and were instead focused on AMD's next generation 32nm APU "Trinity" which was set to launch in mid to late 2012."); *See also* Lead Plaintiffs' Second Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.'s First Set of Interrogatories, p. 174. The sales data of AMD's channel customers demonstrate that they did not "move on from Llano" in favor of Trinity in 2012, as Dr. Thompson claims. *See, e.g.*, Thompson Report, ¶156.

²⁶⁷ "New AMD A-Series Processors Bring Faster Speeds, High Core Count and AMD Radeon HD 7000 Series Graphics to Do-It-Yourself PC Enthusiasts and Gamers," AMD, Press Release, October 2, 2012, ("AMD (NYSE:AMD) today announced retail and distribution channel availability of its second generation AMD A-Series Accelerated Processing Units (APUs) for desktop, small form-factor and home theater PCs.").

Figure 17
Microprocessor Sales by Customer Type and by Chip Type
2011 – 2012
(\$ in thousands)

OEM	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012
Brazos	\$114,868	\$158,728	\$218,400	\$162,042	\$144,733	\$144,726	\$109,529	\$80,578
Llano	\$86	\$68,384	\$179,637	\$265,692	\$198,045	\$112,337	\$27,601	\$13,903
Trinity	\$0	\$0	\$0	\$122	\$51,500	\$145,634	\$191,952	\$178,105
All Others (Non-APU)	\$303,050	\$224,651	\$145,025	\$100,433	\$92,340	\$56,599	\$44,362	\$31,078
Total OEM	\$418,004	\$451,763	\$543,063	\$528,288	\$486,618	\$459,296	\$373,445	\$303,664
Channel	Q1 2011	Q2 2011	Q3 2011	Q4 2011	Q1 2012	Q2 2012	Q3 2012	Q4 2012
Brazos	\$238	\$5,176	\$1,577	\$1,789	\$617	\$1,203	\$515	\$1,260
Llano	\$0	\$6,982	\$37,445	\$97,516	\$121,635	\$76,280	\$96,188	\$63,200
Trinity	\$0	\$0	\$0	\$0	\$0	\$22	\$2,765	\$42,780
All Others (Non-APU)	\$429,003	\$396,265	\$347,349	\$283,299	\$228,992	\$171,169	\$143,352	\$123,632
Total Channel	\$429,240	\$408,422	\$386,371	\$382,604	\$351,244	\$248,674	\$242,820	\$230,873
Total OEM and Channel	\$847,245	\$860,186	\$929,434	\$910,893	\$837,862	\$707,970	\$616,265	\$534,537

Source: AMD sales data [AMD-028-002325474].

109. There was also no indication of a “flight” by OEMs to Trinity. Rather, OEM customers’ switch from Llano to Trinity occurred gradually over the four quarters following Trinity’s initial shipments to OEMs. Had there been a rush to Trinity, this transition would have been more abrupt.

110. Plaintiffs also allege that AMD should have known that Llano would have a “one-year lifecycle.”²⁶⁸ However, chips can be on the market for five or more years.²⁶⁹ Although Plaintiffs allege that the life cycle of a computer chip is approximately one year,²⁷⁰ AMD’s sales data for the years 2011 and 2012 show substantial revenue for chips one year after their respective launches.

²⁶⁸ Complaint, ¶121; See also Lead Plaintiff’s Supplemental Objections and Responses to Defendant Dr. Lisa T. Su’s First Set of Interrogatories, p. 22.

²⁶⁹ Deposition of Darren Grasby, June 22, 2016, p. 69:13-20 (“Q. Now, I’m asking generally here, just based on your experience and your years in the business, once you launch a chip, how long is the life cycle of that chip? A. It can be various. It really varies on the chip. I mean...we’re selling stuff now that’s five years old, for example. So it really depends...on the chip itself.”).

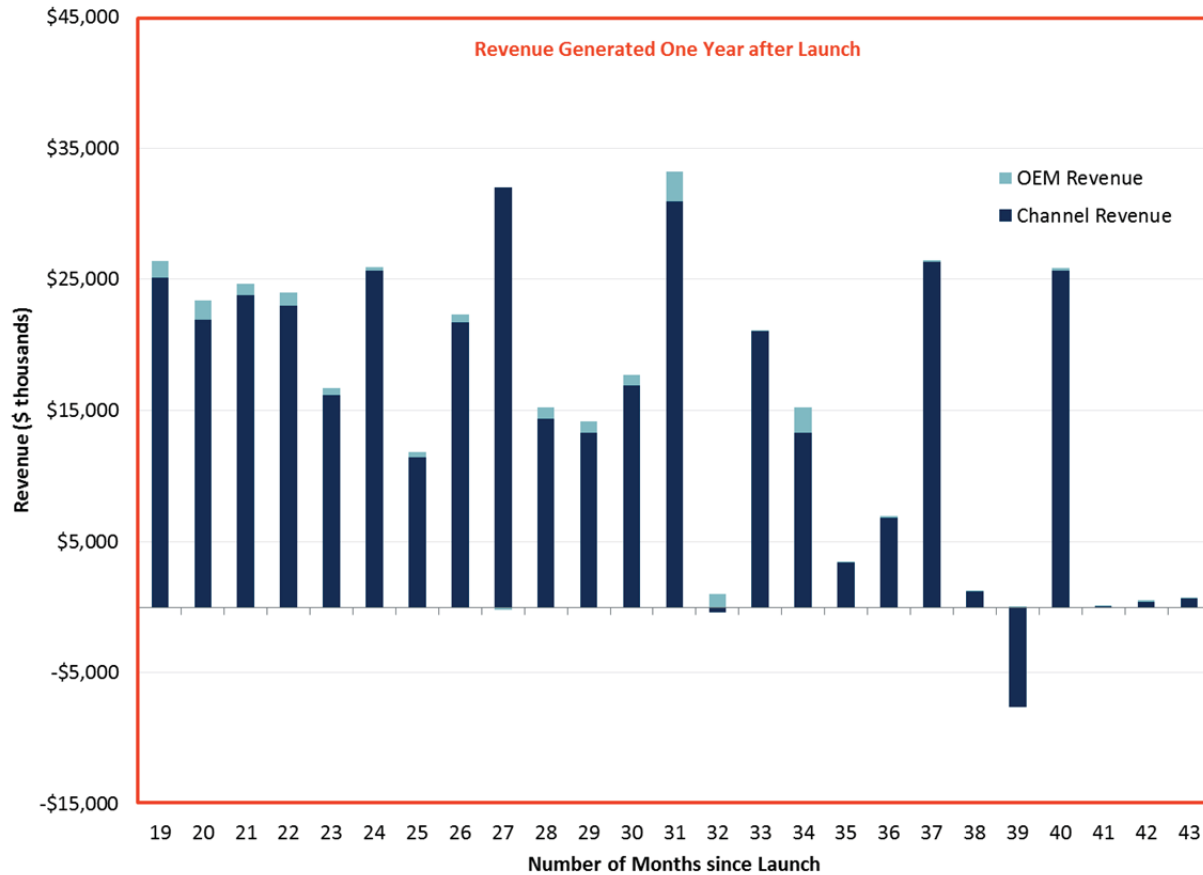
²⁷⁰ Complaint, ¶130 (“The life cycle of a computer chip is approximately one year per product.”).

Monthly revenues of the two best-selling chips²⁷¹ among channel customers are shown in Figure 18 and Figure 19.²⁷² Athlon II 250 launched in June, 2009, so all of its sales in 2011 and 2012 occurred over one year into the product's life. Fifty-five percent of Athlon II 640 sales in 2011 and 2012 occurred more than one year after the product's launch.

²⁷¹ Based on total revenue in 2011-2012.

²⁷² Athlon II 250 and Athlon II 640 generated around 25 percent of revenue among channel customers in 2011-2012.

Figure 18
Athlon II 250
Monthly Revenue Since Launch
2011 - 2012

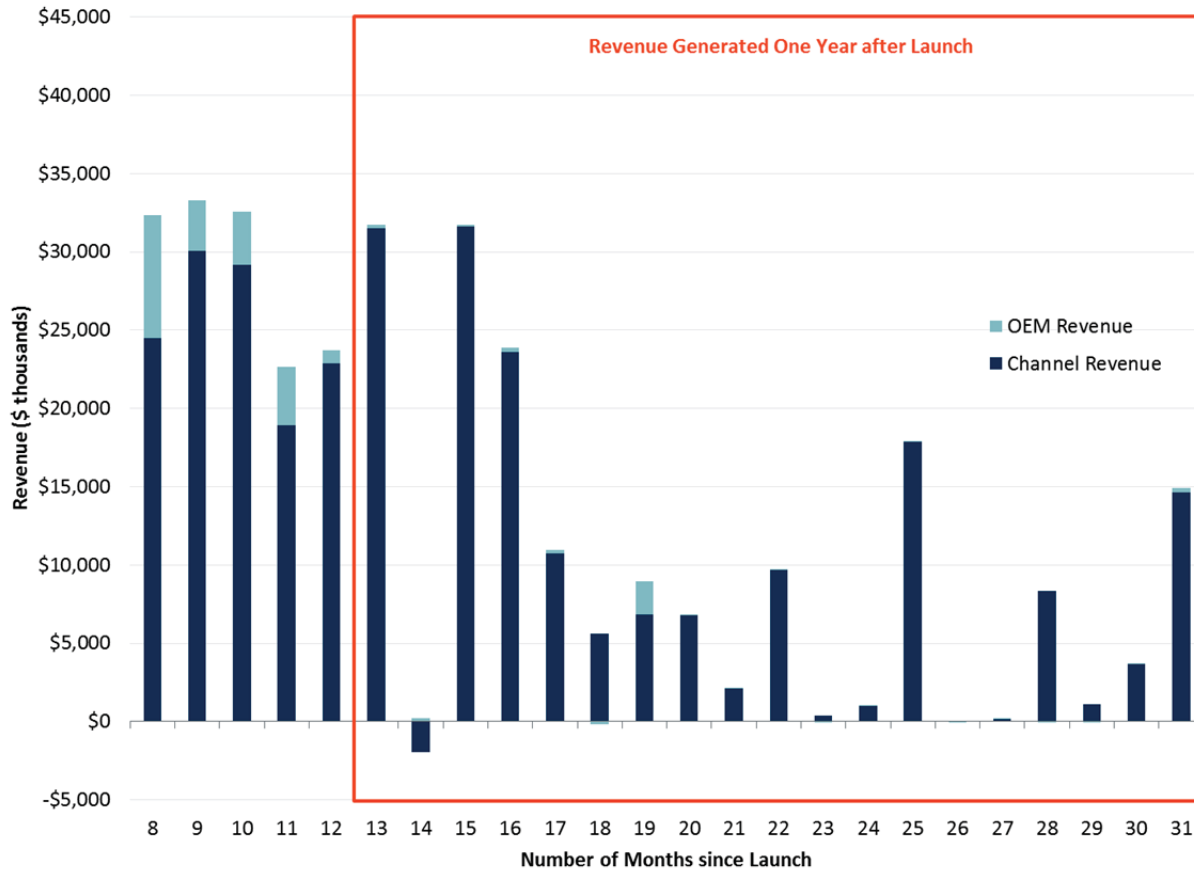


Source: AMD sales data [AMD-028-002325474].

Note: Athlon II 250 launched in June 2, 2009.²⁷³ Number of months since launch is approximated by taking the number of days between launch date and the first day of the week of sale, divided by 365, and multiplied by 12.

²⁷³ “AMD Introduces Next Generation AMD Athlon™ II Processor, Adds Dual Core to Record-Setting AMD Phenom™ II,” AMD, Press Release, June 2, 2009, (“Bringing its acclaimed 45nm technology to new high-volume processor designs, AMD (NYSE: AMD) today announced two new dual-core desktop processors. Building on 10 years of AMD Athlon™ processor innovation, the new 45nm AMD Athlon™ II X2 250 processor gives mainstream consumers exceptional performance, efficiency and value.”).

Figure 19
Athlon II 640
Monthly Revenue Since Launch
2011 - 2012



Source: AMD sales data [AMD-028-002325474].

Note: Athlon II 640 launched in May 10, 2010.²⁷⁴ Number of months since launch is approximated by taking the number of days between launch date and the first day of the week of sale, divided by 365, and multiplied by 12.

111. Put simply, Plaintiffs', and their experts', allegations that Llano supply constraints in Q3 2011 resulted in AMD missing its Q2 2012 and Q3 2012 forecasts because of lowered demand for Llano is not supported by the evidence. Rather, as discussed in Section VI.B., below, the Q2 2012 and Q3 2012 forecast misses were more likely due to shifts in the PC market and industry characteristics.

²⁷⁴ "AMD Athlon II X4 640 specifications," *CPUWorld*, May 10, 2010 ("Introduction date: May 10, 2010").

B. AMD's Q2 2012 AND Q3 2012 FORECAST MISSES WERE LIKELY DRIVEN BY SIGNIFICANT SHIFTS IN THE PC MARKET AND INDUSTRY CHARACTERISTICS

112. Plaintiffs allege that “[u]nderperformance of Llano . . . was responsible for a substantial percentage” of the difference between AMD’s guidance in Q2 2012 and Q3 2012, and AMD’s actual sales.²⁷⁵ Plaintiffs’ experts make the same allegations. For instance, in his report, Mr. Coffman states that due to “the inadequate supply of Llano in 2011” AMD missed its Q2 2012 and Q3 2012 guidance due to “poor channel sales in China and Europe and weak consumer demand in the OEM business.”²⁷⁶ Similarly, Dr. Thompson asserts that “weak demand for the dual-core Llano A4 chips was attributable to numerous interlocking factors that all stemmed from the initial poor Llano supply during 2011,”²⁷⁷ and that “AMD had little Llano channel demand stemming from the ‘fundamental problems’ resulting from the initial failure to launch.”²⁷⁸ This opinion is reflected in Dr. Thompson’s Summary of Opinions, which lists a “cascade of negative events” that occurred over the Class Period, allegedly “due to the lack of healthy Llano yield and wafer supply” in 2011.²⁷⁹

113. In providing these opinions, however, Plaintiffs and their experts do not take into account significant external factors that affected PC sales during the Class Period. Accordingly, any opinions regarding the causal impacts of Llano supply constraints in Q3 2011 on subsequent Llano sales (or AMD’s overall forecast misses in Q2 2012 or Q3 2012) are not justified. Indeed, as explained in detail in this Section VI.B., AMD’s forecast misses were likely the result of profound shifts in the PC market and industry-specific factors.

114. In particular, the demand for microprocessors was dependent on the demand for PCs.²⁸⁰ Figure 20 shows actual global PC shipments (solid dark blue line) and forecasts by IDC, a

²⁷⁵ See Lead Plaintiffs’ Supplemental Responses to Lisa Su Interrogatories, November 28, 2016, pp. 21-23.

²⁷⁶ See Coffman Report, ¶9.

²⁷⁷ Thompson Report, ¶135.

²⁷⁸ Thompson Report, ¶151.

²⁷⁹ Thompson Report, ¶20; Coffman Report, ¶107 (Mr. Coffman likewise contends that “the Q2 2012 revenue miss [is] attributable to the subject of Defendants’ knowing or reckless alleged misstatements and/or omissions” regarding the “demand issues resulting from the yield and manufacturing problems.”).

²⁸⁰ See e.g., “DB Technology Conference Day 2 Takeaways,” *Deutsche Bank*, September 15, 2011 [AMD-021-002254648], p. 1 (“Regarding end markets, semis co’s with exposure to the Auto market seemed to be

prominent market-industry research firm,²⁸¹ in Q1 2012 and Q2 2012 (dark blue and light blue dotted lines). Figure 20 demonstrates an unexpected and dramatic slowdown of global PC shipments during the Class Period. Specifically, PC shipments peaked in Q1 2012 and then began to dive downward. Sales of PCs softened due to deterioration in global macroeconomic conditions²⁸² and a movement toward handheld devices.²⁸³

Continued from previous page

holding up while suppliers to the [sic] most other markets (Industrials, PC, and Consumer etc) sounded cautious on demand and disty inventory burn.”); “INTC Reduces Guidance,” *Longbow Research*, December 12, 2011 [AMD-021-002260937], p. 1 (“Constraints on the amount of PCs which can be built over the next two Qs has [sic] caused ODMs to reduce inventories of MPUs.”).

²⁸¹ IDC is a leading industry research analyst firm, and its data is widely used by industry participants and investors.

²⁸² “Previewing Earnings and CES; Cutting Estimates on ATML, BRCM, IRF, MSCC, MXIM, and ONNN As a Bottom Forms,” *FBR Capital Markets*, January 9, 2012 [AMD-021-002256031], p. 15, FBR expected 2.5 tablets to cannibalize one PC. This equates to ratio of one PC to 2.5 tablets i.e., 40 percent; “Notes From Asia – Win8 Does Not Look Like a Winner,” *BMO Capital Markets*, June 25, 2012 [AMD-021-002250157], p. 1 (“the PC market remains very weak. We believe that weak demand in all regions persist, with various contacts suggesting Europe and China have become incrementally weaker in the past few months. We also think that PC growth in India has slowed.”).

²⁸³ Deposition of Rory Read, July 29, 2016, pp. 373:22-374:1 (“A...at this point, we were also now in the beginnings of what whether we were sure whether it was a one time blip or effecting us only or a very significant slowdown in the PC market.”); Deposition Darren Grasby, June 22, 2016, pp. 273:19-274:3 (“A. Market conditions slowed down...this tablet phenomenon hit the market as well, and went on through the whole of 2012 and into 2013...Analysts reported on it, everyone has reported on it.”).

Figure 20
Shipments of PCs, Last Twelve Months
Q1 2005 – Q4 2015



1. The PC Market Was Negatively Impacted by Global Macroeconomic Conditions and Growth in Demand for Handheld Devices

a. Deterioration in Global Macroeconomic Conditions

115. In general, consumer spending is sensitive to macroeconomic conditions.²⁸⁴ Around the time of the Class Period, AMD derived approximately 85 percent of its revenue from

²⁸⁴ See, e.g., Ludvigson, Sydney C., “Consumer confidence and consumer spending,” *The Journal of Economic Perspectives* 18(2), 2004, pp. 29-50.

microprocessors manufactured for the consumer PC market, which was “highly correlated with macroeconomic conditions.”²⁸⁵

116. The Class Period coincided with an anemic macroeconomic recovery following the Great Recession, which was the broadest and deepest recession since the Great Depression.²⁸⁶ 2012 was further characterized by notable macroeconomic events in China and Europe, the two regions that accounted for most – 61 percent and 14 percent, respectively – of AMD’s microprocessor sales.²⁸⁷ In particular:

- China’s historically rapid economic growth began to slow. Between Q4 2011 and Q1 2012, the growth rate of China’s gross domestic product (“GDP”) fell from 9.5 percent to 8.1 percent.²⁸⁸
- Europe experienced an economic crisis (known as the “Eurozone Crisis”), with the GDP growth rate of the European Union (“EU”) falling from 0.7 to -0.1 percent between Q4

²⁸⁵ “Advanced Micro Devices: New Wafer Agreement Doesn’t Change Our Cautious Stance. Reiterate Neutral,” *J.P. Morgan*, December 7, 2012 [AMD-021-002260126], p. 2 (“AMD derives roughly 85% of its revenue from the PC end market, which is highly correlated with macroeconomic conditions. If the PC end market is weaker/stronger than expected, this could lead to a decrease/increase in microprocessor and GPU shipments, which could result in a downward/upward revision of our revenue and EPS estimates for AMD.”); “With or Without Fabs, Unfortunately AMD is Still AMD,” *J.P. Morgan*, October 19, 2012 [AMD-021-002259992], p. 5 (“AMD derives roughly 75% of its revenue from the consumer PC end market, which is highly correlated with macroeconomic conditions.”).

²⁸⁶ Williams, John, “The Slow Recovery: It’s Not Just Housing,” *Federal Reserve Bank of San Francisco*, April 9, 2012, (President and CEO of the Federal Reserve Bank of San Francisco, John Williams, said in a 2012 speech that “the recovery has been relatively anemic... [M]ore than four years after the recession began, the unemployment rate is still 8.3%, leaving us far short of our employment goal... In the broad sense, what we’ve seen has been a sharp fall in household and business demand for goods and services. That has caused the economy to perform well below its potential... Powerful forces have kept us stuck in a slow-growth pattern... [T]he economy faces obstacles that are national in scope. The slow pace of expansion has affected all regions of the country.”); Obstfeld, Maurice, “IMF Survey: Uncertainty, Complex Forces Weigh on Global Growth,” *International Monetary Fund*, October 6, 2015.

²⁸⁷ AMD sales data [AMD-028-002325474].

²⁸⁸ Bloomberg LP.

2011 and Q1 2012, putting the EU into a period of contraction. In Q2 2012 and Q3 2012, the EU's GDP shrank by 0.4 and 0.5 percent, respectively.²⁸⁹

117. Figure 21 shows the monthly volume of PC shipments over the last twelve months from 2000 through 2015 in China and Europe. Over the decade prior to the Class Period, PC sales generally increased in those regions. In Europe, some signs of weakening PC demand became evident in 2011, but the downturn in shipments accelerated markedly starting in 2012.

Figure 21
Shipments of PCs by Region, Last Twelve Months
Q1 2005 – Q4 2015



118. During the Class Period, market analysts voiced uncertainty surrounding global macroeconomic conditions, particularly in China and Europe. While industry participants began

²⁸⁹ Bloomberg LP; Guerrieri, Paolo, "Think Tank 20: New Challenges for the Global Economy, New Uncertainties for the G-20," *Brookings*, June 2012, p. 49 ("In the Eurozone, fiscal austerity measures applied on a large scale are determining recessionary effects on output in many Southern European economies...").

to note weakening demand due to the macroeconomic environment in 2011,²⁹⁰ conditions worsened relative to expectations throughout 2012.²⁹¹ In June 2012, BMO remarked that “the PC market remains very weak. We believe that weak demand in all regions persist, with various contacts suggesting Europe and China have become incrementally weaker in the past few months.”²⁹² In China, Arete – an equity research firm – noted that “conversations with [PC] retailers suggest growth is slowing fast” and that “weak macro clearly plays a role.”²⁹³

119. In its June 2012 AMD Forecast, IDC noted that the overall PC market was softening and predicted that the Eurozone crisis would have both near and long term negative impacts on the PC market: “While the crisis will clearly reduce income growth, spending and consumer confidence in the near term, solutions to these problems are more longer term in nature – raising the retirement age, reducing entitlement programs – and will likely have a negative impact on PC shipments over the long-term as well.”²⁹⁴

b. Shift from PCs to Handheld Devices

120. At the same time, IDC observed that the PC industry was in the midst of a “once every 20-25 years shift” to a “third platform.”²⁹⁵ This third platform would be built on handheld mobile devices (primarily smartphones and tablets) and apps, cloud services, mobile broadband

²⁹⁰ See “Remain Positive on Semis. Slightly Lower Outlook on the Impact of a Weaker Macro,” *UBS*, November 29, 2011 [AMD-021-002273553], p. 1 (“Nevertheless, macro uncertainty remains and is likely to continue to set semiconductor stocks for a volatile trading environment.”).

²⁹¹ See, e.g., Email from Andrew Buxton to Doug Yacek, Denise Gourlay, Jack Huynh, and Darren Grasby, copying Chris Cloran and Chris Reader, June 1, 2012 [AMD-003-000286441] (“My recommendation is that we approve this return as we may be able to move it to another global location and turn it for the qtr. Avnet will re stock in August but due to the extreme seasonality and mkt conditions in EMEA will need minimal additional product until then outside their existing backlog on other lines.”).

²⁹² “Notes From Asia – Win8 Does Not Look Like a Winner,” *BMO Capital Markets*, June 25, 2012 [AMD-021-002250157], p. 1.

²⁹³ “Future of PCs: Revolution Time?” *Arete*, September 24, 2012 [AMD-021-002244421], p. 2.

²⁹⁴ Email from Ruth Cotter to Rory Read, June 16, 2012 [AMD-016-001768075].

²⁹⁵ “IDC Predictions 2012: Competing for 2020,” *International Data Corporation*, December 2011 [AMD-003-000278009], p. 2. The first and second platforms refer to the original mainframe computer system and the web-based client-server model, respectively.

networks, big data analytics, and social technologies.²⁹⁶ Morgan Stanley shared the same industry outlook, “[W]e are in the early innings of the mobile computing cycle—the largest in the history of computing.”²⁹⁷

121. During the Class Period, smartphone shipments nearly doubled. As of the end of Q1 2011, 340 million smartphones had shipped over the last twelve months (LTM). By the end of Q3 2012, LTM shipments of smartphones increased significantly to approximately 610 million,²⁹⁸ an increase of 79 percent. Likewise, demand for tablets increased sharply in the same timeframe. By January 2012 an “impressive” 29 percent of adults in the United States owned a tablet compared to 2 percent just three years prior.²⁹⁹

122. AMD was not “well-positioned”³⁰⁰ to benefit from the growth of handheld mobile platforms and did not sell a meaningful amount of microprocessors for handheld mobile devices during the Class Period.³⁰¹ Smartphone and tablet developers, such as Apple, preferred ARM-based CPUs over AMD’s x86 chips, because ARM chips were more energy-efficient.³⁰² On an April 2011 phone call, Mr. Steve Kleynhans of Gartner, Inc., an industry research firm, told Mr. Dan Pickens of AMD, “I don’t think Brazos will fit into something like an iPad 2.0...you don’t

²⁹⁶ “IDC Predictions 2012: Competing for 2020,” *International Data Corporation*, December 2011 [AMD-003-000278009], p. 2.

²⁹⁷ “Tablet Demand and Disruption: Mobile Users Come of Age,” *Morgan Stanley*, February 14, 2011 [AMD-021-002262923], p. 4.

²⁹⁸ Gartner quarterly press releases, available at: <http://www.gartner.com/newsroom/archive/>.

²⁹⁹ Meeker, Mary, “Internet Trends @ Stanford – Bases,” *KPCB*, December 3, 2012, p. 12.

³⁰⁰ Email from Lyndsey Rojas to Chris Cloran and Leslie Sobon, copying Andrew Fox and Phil Hughes, April 12, 2011 [AMD-003-00078817].

³⁰¹ AMD’s sales of Z-Series APUs, its semiconductor series for tablets, made up only \$3.0 million of AMD’s total sales of \$6,244 million (less than one percent) in 2011-2012. *See* Figure 6 in this report. *See also*, AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 5 (“Our APUs for mobile PC platforms consist of our performance, mainstream AMD A-Series APU, the AMD E-Series APU for everyday performance, the AMD C-Series APU for HD internet experiences in small form factors, and the AMD Z-Series APU for Windows-based tablets.”).

³⁰² “Tablet Demand and Disruption: Mobile Users Come of Age,” *Morgan Stanley*, February 14, 2011 [AMD-021-002262923], p. 29 (“Apple’s selection of ARM as its iPad CPU was based largely on its desire to deliver a tablet with a 10-hour battery life – the more power-efficient ARM won out over the more power-hungry x86.”).

appear to be well-positioned for the next battleground, which is coming really fast.”³⁰³ In February 2012, Canaccord Genuity explained, “[AMD]’s lack of a meaningful tablet roadmap could negatively impact revenue as mainstream notebooks are cannibalized by tablets.”³⁰⁴ In July 2012, Goldman Sachs cited “acute equity concerns” for AMD tied to “slowing end-market demand, particularly in desktops as consumers gravitate toward mobile solutions like tablets.”³⁰⁵ In October 2012, Barclays noted, “[W]e continue to see a slowdown in end market demand across the board led by computing which remains under pressure as mobile devices continue to take share from PC’s.”³⁰⁶

2. Industry Characteristics and AMD Sales Patterns Added Additional Forecasting Challenges

123. Characteristics of the microprocessor industry during the Class Period amplified the challenge that AMD faced in forecasting sales. The microprocessor industry, particularly during the Class Period, was characterized by volatility in demand, which increases uncertainty. The industry is also highly concentrated, with AMD and Intel the only significant suppliers of x86 microprocessors. Research has shown that forecast error tends to be higher in markets with fewer competitors.³⁰⁷ AMD’s microprocessor sales were also heavily weighted towards the end of the quarter, further limiting AMD’s visibility into demand.

a. Market Concentration: Intel Dictated the Market

124. The market for PC microprocessors is highly concentrated on the supply side, with Intel and AMD the only substantial producers. [REDACTED]

[REDACTED] Its overall dominance in the PC microprocessor

³⁰³ Email from Lyndsey Rojas to Chris Cloran, and Leslie Sobon, copying Andrew Fox and Phil Hughes, April 12, 2011 [AMD-003-000078817].

³⁰⁴ “Analyst Day Bolsters Our View On Yield Improvements And Share Gain,” *Canaccord Genuity*, February 2, 2012 [AMD-021-002251133], p. 3.

³⁰⁵ “Solid credit metrics for now but poor strategic positioning adds risk,” *Goldman Sachs*, July 23, 2012 [AMD-021-002258245], p. 1.

³⁰⁶ “Y/Y Declines Persist, Waiting for Inflection,” *Barclays*, October 3, 2012 [AMD-021-002245615], p. 1.

³⁰⁷ Gartner, William B. and Robert J. Thomas, “Factors Affecting New Product Forecasting Accuracy in New Firms,” *Journal of Product Innovation Management* 10, 1993, p. 44.

market, driven by the firm's extensive financial resources, made AMD vulnerable to Intel's marketing activities.³⁰⁸

125. Figure 22 shows Intel's revenues were approximately eight times those of AMD at the beginning of 2011. During 2011 and 2012, AMD's gross profit margin percentage ranged from 2 to 46 percent, whereas Intel's gross profit margin percentage ranged from 58 to 64 percent. AMD's operating margin percentage ranged from negative 37 percent to eight percent, whereas Intel's operating margin percentage ranged from 23 to 34 percent.

Figure 22
AMD and Intel Financial Summary
Q1 2009 – Q4 2013
(\$ in millions)

	AMD					Intel				
	Revenue	Gross Profit	Gross Profit Margin	Operating Income	Operating Income Margin	Revenue	Gross Profit	Gross Profit Margin	Operating Income	Operating Income Margin
Q1 2009	\$1,177	\$511	43%	-\$298	-25%	\$7,145	\$3,238	45%	\$647	9%
Q2 2009	\$1,184	\$441	37%	-\$249	-21%	\$8,024	\$4,079	51%	-\$12	0%
Q3 2009	\$1,396	\$585	42%	-\$77	-6%	\$9,389	\$5,404	58%	\$2,579	27%
Q4 2009	\$1,646	\$735	45%	\$1,288	78%	\$10,569	\$6,840	65%	\$2,497	24%
Q1 2010	\$1,574	\$741	47%	\$182	12%	\$10,299	\$6,529	63%	\$3,448	33%
Q2 2010	\$1,653	\$738	45%	\$125	8%	\$10,765	\$7,235	67%	\$3,981	37%
Q3 2010	\$1,618	\$739	46%	\$128	8%	\$11,102	\$7,321	66%	\$4,136	37%
Q4 2010	\$1,649	\$743	45%	\$413	25%	\$11,457	\$7,406	65%	\$4,023	35%
Q1 2011	\$1,613	\$691	43%	\$54	3%	\$12,847	\$7,885	61%	\$4,158	32%
Q2 2011	\$1,574	\$720	46%	\$105	7%	\$13,032	\$7,902	61%	\$3,935	30%
Q3 2011	\$1,690	\$756	45%	\$138	8%	\$14,233	\$9,018	63%	\$4,785	34%
Q4 2011	\$1,691	\$773	46%	\$71	4%	\$13,887	\$8,952	64%	\$4,599	33%
Q1 2012	\$1,585	\$27	2%	-\$580	-37%	\$12,906	\$8,265	64%	\$3,810	30%
Q2 2012	\$1,413	\$638	45%	\$77	5%	\$13,501	\$8,554	63%	\$3,832	28%
Q3 2012	\$1,269	\$392	31%	-\$131	-10%	\$13,457	\$8,515	63%	\$3,841	29%
Q4 2012	\$1,155	\$178	15%	-\$422	-37%	\$13,477	\$7,817	58%	\$3,155	23%
Q1 2013	\$1,088	\$445	41%	-\$98	-9%	\$12,580	\$7,066	56%	\$2,519	20%
Q2 2013	\$1,161	\$459	40%	-\$29	-2%	\$12,811	\$7,470	58%	\$2,719	21%
Q3 2013	\$1,461	\$521	36%	\$95	7%	\$13,483	\$8,414	62%	\$3,504	26%
Q4 2013	\$1,589	\$553	35%	\$135	8%	\$13,834	\$8,571	62%	\$3,549	26%

Source: Bloomberg LP; Intel, 2010 Form 10-K, February 18, 2011.

³⁰⁸ "Upgrading to Buy Ahead of Expected Share Gains and Additional Upside," *Canaccord Genuity*, July 22, 2011 [AMD-021-002251223], p. 5 ("AMD faces considerable competition from Intel in the microprocessor market. Intel's significant financial resources enable it to market its products aggressively and to target customers and channel partners with special initiatives.").

126. Given its market dominance, Intel was able to adjust its pricing and marketing strategies to maintain or pick up market share at AMD's expense. Moreover, Intel's particular product price changes were unknown to AMD in advance, forcing AMD to react to these changes in order to be competitive, and adding to AMD's challenges in forecasting sales and margins.³⁰⁹ One example in which Intel used its advantageous pricing tactics to undercut AMD was by attacking AMD's Brazos APUs. With the success of Brazos in early 2011, AMD appeared to be gaining share in the low-end PC market. However, starting in mid-2011, Intel began to aggressively price its products, in particular its lower-end Pentium and Celeron Sandy Bridge processors, and target customers with special incentives to regain and protect share in the low-end market.³¹⁰ Subsequent to Intel's aggressive price reduction, in 2012, AMD noted that its "[p]arts are priced out of position" and that it was "struggling competitively against Intel with channel partners."³¹¹

³⁰⁹ Deposition of Darren Grasby, June 22, 2016, pp. 206:19–207:13 ("Q. Okay. And then the...fourth bullet point says, "Intel moving [Sandy Bridge]... pricing before we have APU established in the market." What did you mean by that? A. That would be me saying that Sandy Bridge is being priced aggressively, which is a competitive comment to -- to us obviously positioning APUs... Intel historically back then would get aggressive Q4, Q1, because they invariably bring in their new technology in end of Q1, Q2... It's a competitive statement. Q. And would Intel moving Sandy Bridge pricing have a negative effect on Llano? A. Intel moving Sandy Bridge pricing has a negative effect on any AMD CPU, because it's a competitive positioning, us versus them.").

³¹⁰ "AMD/INTC: Expect positive 2Q reports for INTC & AMD; see rising risk for INTC in 2H11 on soft demand, pricing & market share," *Cleveland Research Company*, July 18, 2011 [AMD-021-002252422], p. 3 ("INTC has turned more price aggressive in our research in Pentium Dual-Core, Celeron, and Atom product lines. The INTC aggression is in reaction to market share gains for AMD Brazos in netbook and low-end notebook market."); "Upgrading to Buy Ahead of Expected Share Gains and Additional Upside," *Canaccord Genuity*, July 22, 2011 [AMD-021-002251223], p. 5 ("AMD faces considerable competition from Intel in the microprocessor market. Intel's significant financial resources enable it to market its products aggressively and to target customers and channel partners with special initiatives.");



³¹¹ Email from David Kenyon to BJ Furse, Chris Goelkel, Jack Huynh, and John Crank, copying Darren Grasby, June 22, 2012 [AMD-003-000285594] ("Parts are priced out of position and we are struggling

Continued on next page

In reaction to attempts by Intel to attack Brazos, AMD lowered prices to match Intel, [REDACTED] [REDACTED] AMD anticipated that this price decrease would result in a two percent decline in gross margin for Brazos through the end of the year.³¹³

127. In Q2 2012, Intel frequently met or undercut AMD's Brazos APU prices among several large OEM customers.³¹⁴ In Q3 2012, Intel aggressively discounted end-of-life Sandy Bridge parts, resulting in share losses for AMD.³¹⁵ Equity analysts indicated that in order to maintain

Continued from previous page

competitively against Intel with channel partners who don't see the APU value prop."); Email from Rajesh Suman to Bertrand Coquard and Andrew Buxton, copying Suki Patel, May 18, 2012 [AMD-003-000286432] ("We are facing un-precedent head winds in terms of declining sales, margins and aged inventory that are severely impacting our profitability. The attached items were purchased over six months ago and we fully expected to sell these in line with your initial forecasts but due to a lack of product awareness, infra-structure cost, aggressive Intel positioning this has not materialised."); Email from Ivan D'Alencon to Jaideep Malhotra, copying John Montgomery, Mohit Jian, and Rajesh Suman, May 31, 2012 [AMD-003-000286254] ("Several issues are affecting our overall business in LA...APU soft demand still (Pentium board + cpu solution \$10 lower than AMD solution.) Athlon X2 losing ground to Intel's low cost Pentium cpu's.").

[REDACTED]

³¹³ Email from Chris Goelkel to John Byrne, Thomas Seifert, and Denise Gourlay, copying Neil Reynolds, May 30, 2012 [AMD-016-001919166] ("We are estimating ~2.3% Brazos GM% hit, for a \$5M GM impact in each of the Q3 and Q4 and \$10M and \$15M in CM in Q3 and Q4 respectively.").

[REDACTED]

³¹⁵ "Q3 warning anticipated, still underscores challenges," *Bank of America Merrill Lynch*, October 11, 2012 [AMD-021-002250408], p. 1 ("AMD's preliminary sales and margin miss in 3Q is reflective of a weak macro/PC market, but also of company specific issues including: 1) Share losses against Intel's aggressive pricing with end-of-life 32nm Sandy Bridge parts...").

any level of market share, AMD would have to be respond to Intel's pricing decisions by reducing its own prices, putting pressure on AMD's profitability.³¹⁶

128. This pricing pressure is reflected in Figure C4 of Appendix C, which shows the average selling price (ASP) per unit for Intel and AMD microprocessor products. During 2011, AMD and Intel both appeared to be generally maintaining or increasing their ASPs. However, starting in Q2 2012, Intel lowered its ASP, halting AMD's ability to increase prices and driving down AMD's products to lower price points.

b. Market Volatility

129. The microprocessor market is volatile. Changes in demand for PCs, and thus for microprocessors, are difficult to predict in advance. As discussed below, even industry analysts were unable to accurately forecast sales of PCs in Q2 2012 and Q3 2012. Their forecasts were substantially different from actual results, even after repeated downward revisions.

130. Moreover, volatility in final product demand may be amplified upstream, with suppliers of intermediate products facing even greater volatility in orders. This phenomenon, referred to as the "Bullwhip Effect," has been observed in computer-related industries.³¹⁷ Research also suggests that the Bullwhip Effect is magnified the further removed a supplier is from the point of final sale.³¹⁸ As discussed above, for chips sold into the channel, AMD was separated from final

³¹⁶ "Negative Pre Underscores PC Weakness & Its Impact to GM," *Citi*, October 11, 2012 [AMD-021-002251693], p. 5 ("If Intel or Nvidia lower their MPU or GPU pricing materially, AMD may have to respond in kind to maintain market share, thereby pressuring its profitability.").

³¹⁷ Lee, Hau L., V. Padmanabhanand, Seungjin Whang, "Information distortion in a supply chain: The bullwhip effect," *Management Science* 43(4), 1997, pp. 546-558 ("At Hewlett-Packard, the orders placed to the printer division by resellers have much bigger swings and variations than customer demands, and the orders to the company's integrated circuit division have even worse swings. Also, it is often said that the DRAM market faces a much higher volatility than the computer market.").

³¹⁸ Lee, Hau L., V. Padmanabhan and Seungjin Whang, "Information distortion in a supply chain: The bullwhip effect," *Management Science* 43(4), 1997, p. 546 ("...orders to the supplier tend to have larger variance than sales to the buyer (i.e., demand distortion), and the distortion propagates upstream in an amplified form (i.e., variance amplification.)").

end-users by several layers of distributors or intermediate producers. This separation dampened AMD's ability to gauge demand for its microprocessor products in the channel.³¹⁹

131. AMD tracked their direct customer channel sales, and AMD's direct customers reported to AMD their sales of AMD products to channel customers.³²⁰ However, AMD could not track channel distributors' sales to resellers because it was not involved in those transactions.³²¹ This lack of visibility made it difficult for AMD to forecast channel demand for its products, as an exact reflection of consumer demand was often not realized until products were put "on the shelf" downstream in the supply chain, several steps removed from AMD³²². It also took time for products to reach customers, and for customers to sell products, so the company did not receive feedback on customer demand in real time.³²³ These visibility issues, a clear example of the

³¹⁹ Deposition of Lisa Su, July 13, 2016, p. 177:5-13 ("So if you look at the way our channel works, we have the first level distributors, which are usually our master distributors, and we take revenue when the master distributors sell to the next level, which usually is also a set of distributors. It may be more regional or something like that. And then that next level of distributes would then sell -- you know, could be three -- another level or it could be actual retail.").

³²⁰ Deposition of Darren Grasby, June 22, 2016, p. 21:11-14 ("A...And then below that, which we don't touch as a sales organization, you've got tens of thousands of small resellers'...").

³²¹ Deposition of Darren Grasby, June 22, 2016, p. 34:8-15 ("A...we obviously track the product to the AIB. And then the AIB sells it into whoever their customer is. We track the silicon to that point, because they have to report that resell to us...But that's it, that's the only tracking we have."); pp. 38:21-39:3 (A...we get resell reports in from the AIBs, so the AIBs at the point of selling it, we get that report. So as they sell it into those 700-odd customers, we know what goes in, but we...have no visibility of what then goes down, because it's just too vast, broad, and you just couldn't collect that level of data down to thousands of resellers.").

³²² Deposition of Darren Grasby, June 22, 2016, pp. 101:15-102:9 ("Q. Was there enough Llano to satisfy channel demand in the second quarter? A. I can't answer that, because until you put the product on the shelf, you don't actually really know what demand is downstream. So a lot of it's, you know, you're taking verbal hearsay feedback to us. So until you physically get it on the shelf, you don't -- you don't know if it's going to sell or not...You know, as I said earlier, you got thousands of mom and pop resellers further downstream. Until material starts shipping through those, you just don't know."); p. 150:6-15 ("Q. Did you have enough supply to satisfy demand? A. Again...you just don't know what that demand number is...it's not a physical number thing...I cannot sit there and say, we have a demand for 5 million units, because we don't know with all those thousands of resellers...").

³²³ Deposition of Rory Read, July 29, 2016, p. 85:14-18 ("...one of the things that was important was that we needed better business data in order to build better AOPs, better estimates, and better understanding of what was happening."); p. 135:6-22 ("And in the case of like the emerging market, they end up in very

Continued on next page

“Bullwhip Effect” in practice, compounded AMD’s difficulties in recognizing shifts in the market, including the downturn during the Class Period, discussed below in this report.

132. During the Class Period, Intel noted that it experienced similar visibility issues in the channel:

While some channels like PCs sold through consumer retail outlets in mature markets have deep visibility, other channels, especially in emerging markets, are not well reflected in the forecast of third-party firms until shipments from Intel and its competitors have been reconciled.³²⁴

133. AMD’s microprocessor sales to the channel were also less concentrated than those to OEMs. AMD’s top ten OEMs accounted for 97 percent of AMD’s OEM sales, but the top ten channel customers accounted for only 85 percent of AMD’s channel sales. Therefore, AMD had to estimate sales to a greater number of channel customers than OEMs to cover the same fraction of sales in each customer category.³²⁵ Assuming the probability of forecast error was the same for each customer, this increased the probability of forecast error of AMD’s overall forecast for the channel.

Continued from previous page

small mom-and-pop stores in India and China that might sell just a handful of products. And it takes several months to get all the way from and all the way back up in terms of that feedback. So when you measure that it goes in, that’s a nice metric, and it’s a useful metric. But you also want to know when it finally sells out to the end user, because that’s very important to see that end-to-end circle. Now, you can make estimates based on that base on history. Right? And you’d look at history. But if there’s something that changes significantly, related to what we’ve seen in history, you might have a dramatic change in that result.”); pp. 321:24-322:10 (“As I mentioned several times in my testimony, if you can look at how a channel works in our management system, our management system looked at sell-in and it was a multi-tier channel. So you were not going to get data that said -- went all the way to the bottom and all the way back to the top for 90, 120, 150 days. So if we’ve got volume in, it’s not going to be till May or June that we’re going to really see data that’s gone to the bottom of that channel all the way back in any substantial way.”); *See also* Deposition of Lisa Su, July 13, 2016, p. 248:2-8 (“A. So in general if you put a lot of inventory into the channel in a short amount of time, the channel will take time to sell the inventory, and so you end up with, you know, a bit of a nonlinear revenue picture, which makes it kind of more difficult to predict where the business really is. It clouds some of the visibility in the metrics.”).

³²⁴ Intel, Q1 2011 Earnings Conference Call, April 19, 2011.

³²⁵ Deposition of Lisa Su, July 13, 2016, p. 46:12-17 (“Q. What about OEMs? A. I would say the OEM business, it was...a little bit easier to track because you’re talking about top-tier customers who have a bit more – you’re not dealing with as many people so it’s a little bit easier to track.”).

134. In 2012, AMD's visibility into the PC market, and ability to recognize industry trends, was further diminished by unusual flooding in Thailand. This flooding caused a shortage in hard disk drives,³²⁶ which temporarily reduced PC manufacturers' demand for other PC components such as chips.³²⁷ The Thai flooding and subsequent HDD supply shortage put downward pressure on the semiconductor industry in Q4 2011 and Q1 2012.³²⁸ Although AMD's revenues, other than for graphics chips, were not substantially impacted by the flooding,³²⁹ the disruption to the PC market likely obscured visibility into overall PC industry trends.

c. AMD's Sales Patterns Added Additional Forecasting Challenges

135. AMD's sales patterns within each quarter also likely increased AMD's difficulty in making accurate sales forecasts. AMD's sales, like those of other companies in tech industries,³³⁰ and in the microprocessor industry in particular,³³¹ were not distributed evenly over the length

³²⁶ "The PC Market Is Disrupted By HDD Shortages: The Severity, Resulting Opportunities, And Expected PC Market Reactions," IDC, November 2011 [AMD-003-000409953], p. 2 ("In the first half of 2011, Thailand accounted for between 40% and 45% of worldwide HDD production.").

³²⁷ Email from Ivan D'Alencon to Jaideep Malhotra, copying John Montgomery, Mohit Jian, and Rajesh Suman, May 31, 2012 [AMD-003-000286254] ("Several issues are affecting our overall business in LA: HDD price declines making channel to be extremely cautious.; Slowing PC demand and consumer end demand...APU soft demand still...").

³²⁸ See, e.g., "SIA Data Shows Y/Y Decline," *Barclays Capital*, December 5, 2011 [AMD-021-002245721], p. 10.

³²⁹ AMD, Q4 2011 Earnings Conference Call (Rory Read), January 24, 2012, p. 5 ("Now at the end of 4Q, we did see a little bit of pressure in terms of hard disk, but we actually saw it in the area of the graphics chips. This, we think, is going to be reflected in a very resilient PC supply chain that we think will recover relatively quickly... And while we saw a little bit of chop there in terms of hard disk impacting the graphics, I think we'll see a little bit more here in the beginning of 1Q. But I think this market should continue to recover.").

³³⁰ Ip, Greg, "Growth Companies Feel Pressure to Book Sales," *The Wall Street Journal*, September 16, 1997; Neale, John J. and Sean P. Williams, "Managing Inventory in Supply Chains with Nonstationary Demand," *Interfaces* 39(5), pp. 388-399.

³³¹ Deposition of Thomas Seifert, August 11, 2016, p. 251:11-12 ("But revenue in this business is normally back-end loaded, yeah."); Email from John Docherty to Michael Massetti and SoonEe Neoh, December 8, 2011 [AMD-005-000742531] ("[W]e've known about this hockey stick output for >3 months."); Deposition of Rick Bergman, August 2, 2016, p. 207:124 ("Q. What does the 'back-end hockey stick' mean in this context? A. ...the PC industry has conditioned itself, whether it was AMD... or others in the supply chain

Continued on next page

of a quarter. Rather, a substantial portion of AMD's sales were weighted towards the end of each quarter (a "back-end loaded" or "hockey stick" sales pattern).³³² Because AMD had a largely incomplete assessment of its quarterly sales up until the actual end of each quarter, forecasting a quarter's sales was challenging even after the quarter was well underway.

136. Figure 23 to Figure 26 illustrate this back-end loaded sales pattern for AMD's sales of microprocessor products to the channel and AMD's OEM sales for the notebook market in Greater China,³³³ which together made up 75 percent of AMD's sales in 2011-2012. Figure 23 and Figure 24 show that sales in the last week of each quarter (as shown by the light blue bars) were significantly higher than any other week in the quarter (represented by dark blue bars). Figure 25 and Figure 26 show that on average a significant portion – 32 percent of sales to channel customers, and 34 percent of sales to OEMs for the notebook market in Greater China, were not realized until the last week of each quarter.

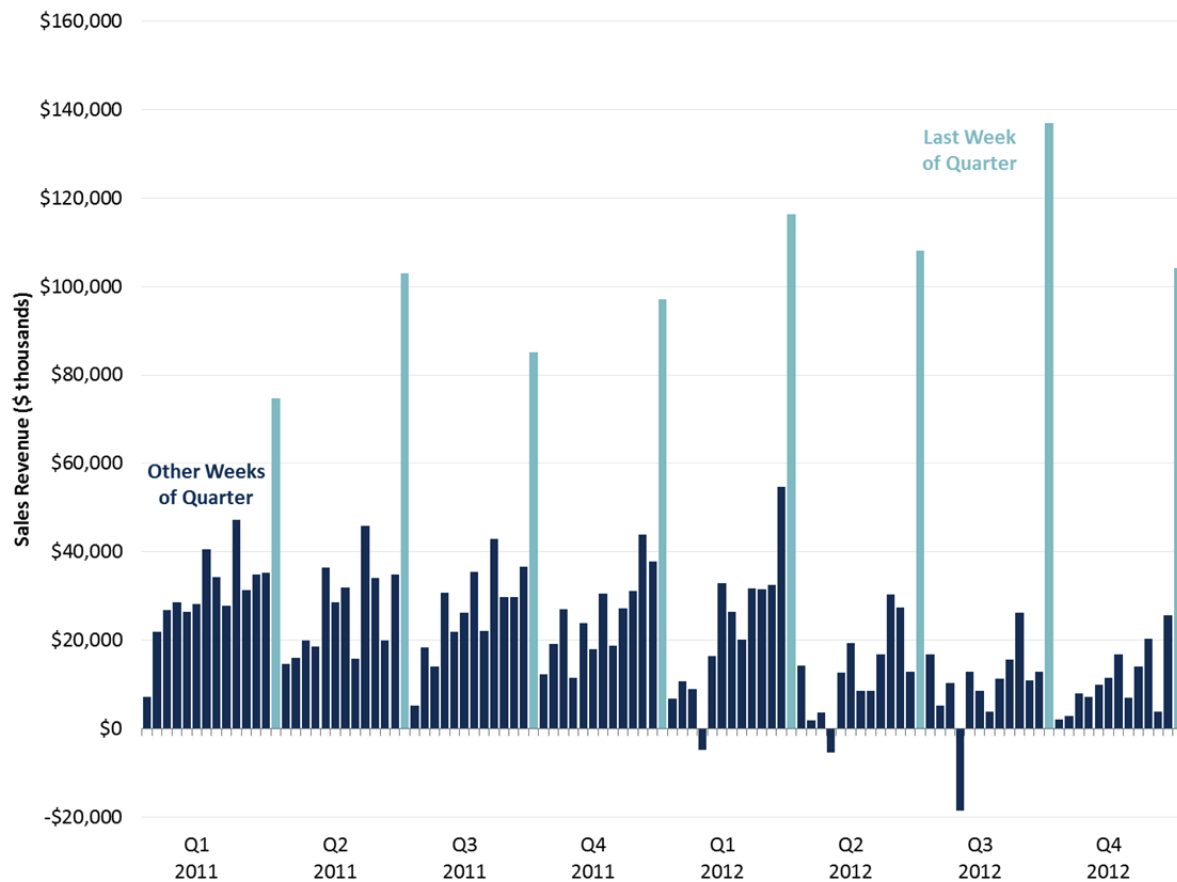
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as well as the customer base, that a lot of the inventory decisions in procurement occurred in the latter part of fiscal quarters...Q...So that's a supply statement. And by that I mean your testimony is it was the supply that would go up at the end; not demand? A. No...I'm saying it's actually the way the industry has moved...Q. So the back-end hockey stick is an industry phenomenon, is that what you're telling me? A. Yes, that's correct.").

³³² Deposition of Lisa Su, July 13, 2016, p. 129:20-21 ("...I will say that it's not unusual for our quarters to be back-end loaded.").

³³³ AMD's sales to OEMs for the mobile PC market in other regions and for the desktop market did not display this back-end weighted sales pattern. AMD sales data [AMD-028-002325474].

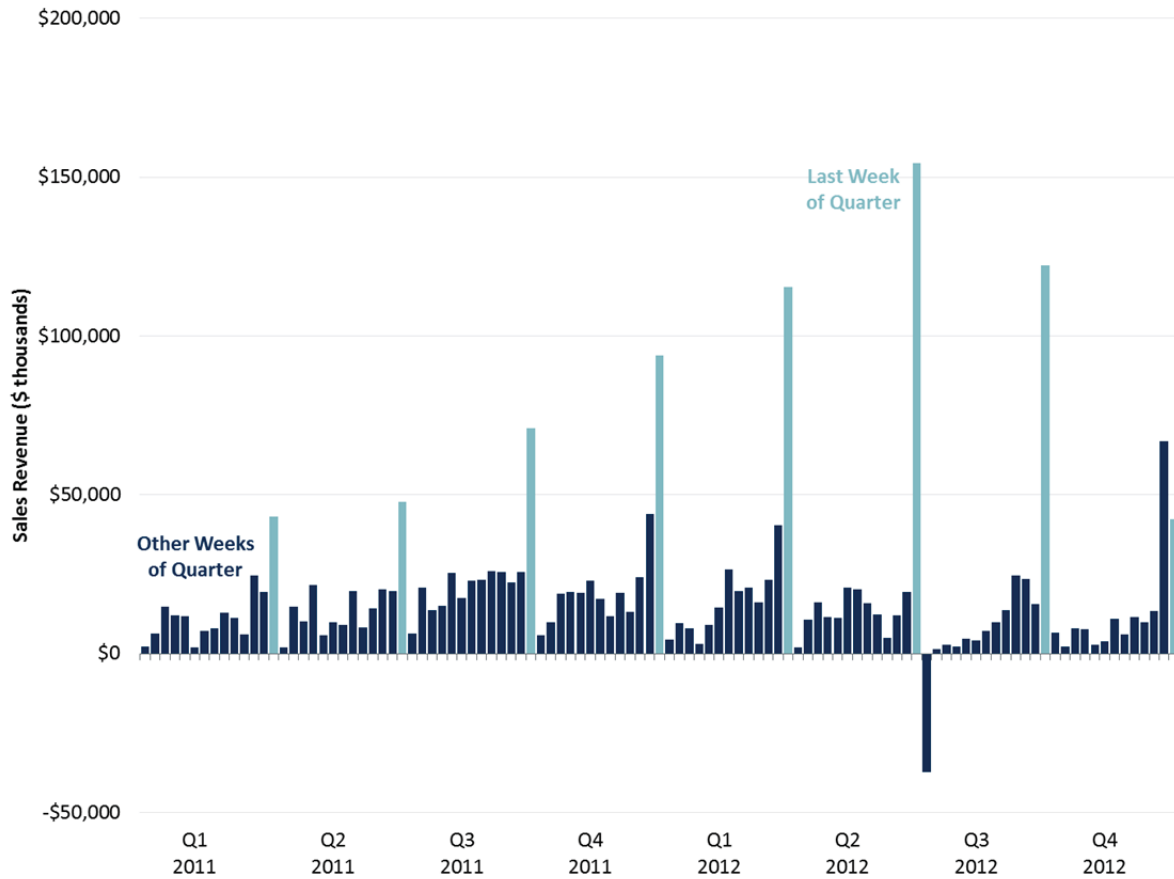
Figure 23
Weekly Microprocessor Sales to Channel Customers
2011-2012



Source: AMD sales data [AMD-028-002325474].

Note: Sales with region labeled "not assigned" were assigned to regions, where possible, proportionately to the customer's overall regional distribution of sales in 2011-2012.

Figure 24
Weekly Microprocessor Sales to OEMs for Mobile PCs in Greater China
2011-2012

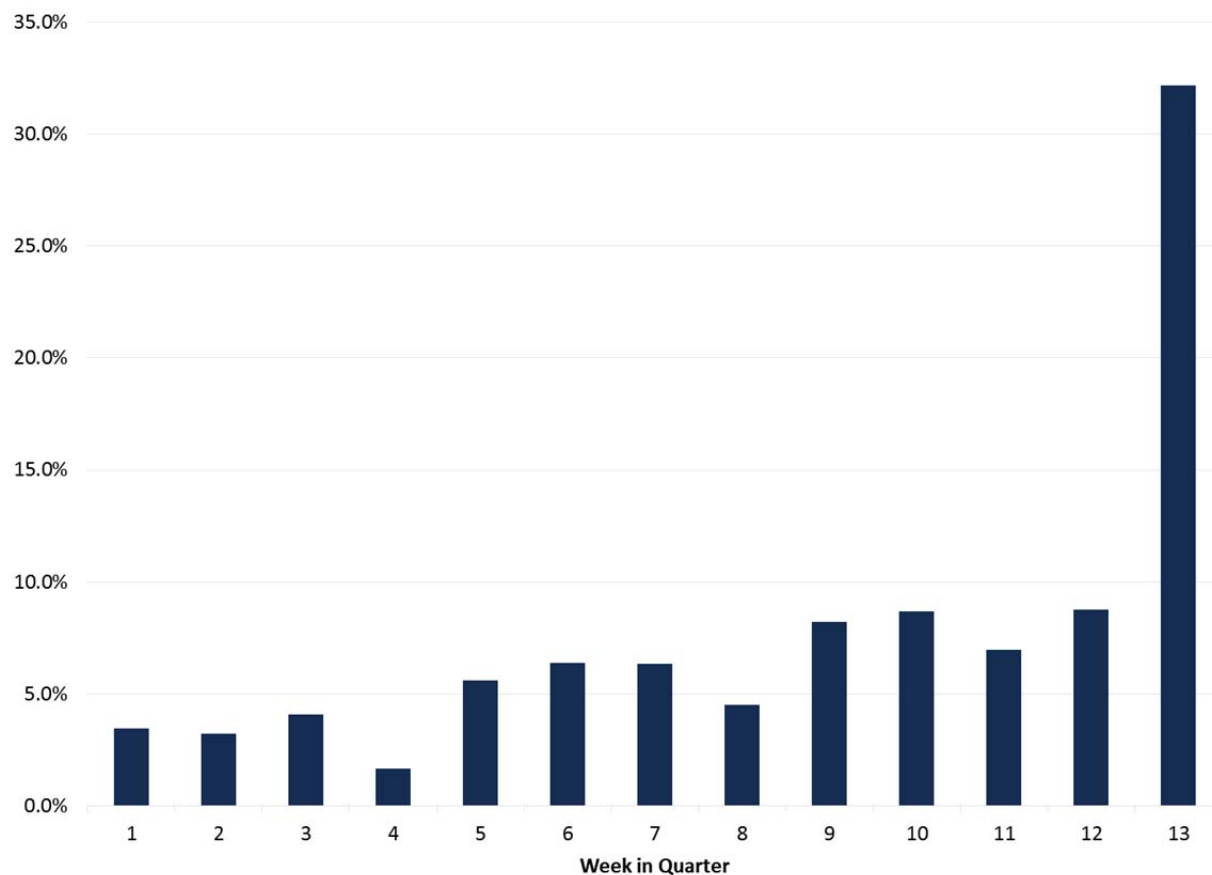


Source: AMD sales data [AMD-028-002325474].

Note: Sales with region labeled "not assigned" were assigned to regions, where possible, proportionately to the customer's overall regional distribution of sales in 2011-2012.

Figure 25
Average Percentage of Sales to Channel Customers
in Each Week of Quarter

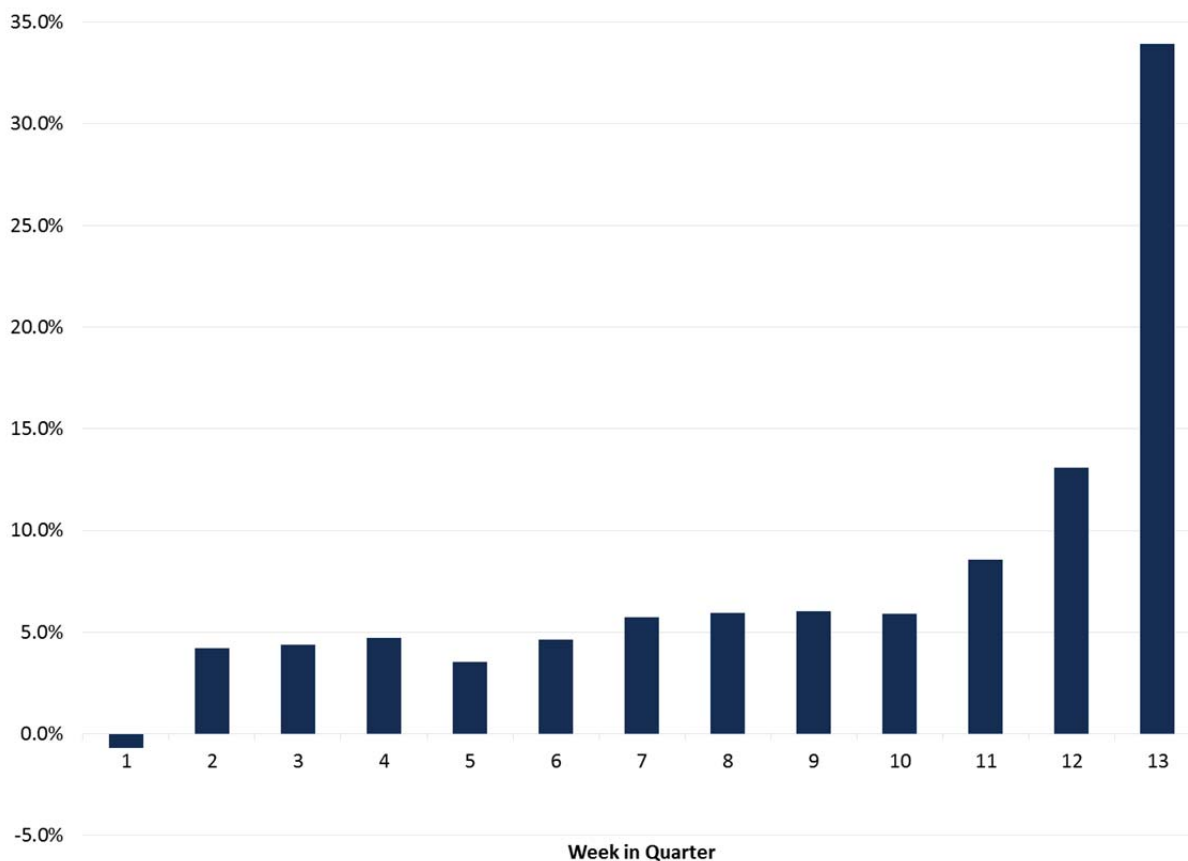
2011 – 2012



Source: AMD sales data [AMD-028-002325474].

Note: Sales with region labeled "not assigned" were assigned to regions, where possible, proportionately to the customer's overall regional distribution of sales in 2011-2012.

Figure 26
Average Percentages of Sales to OEMs for Mobile PCs
in Greater China in Each Week of Quarter
2011 – 2012

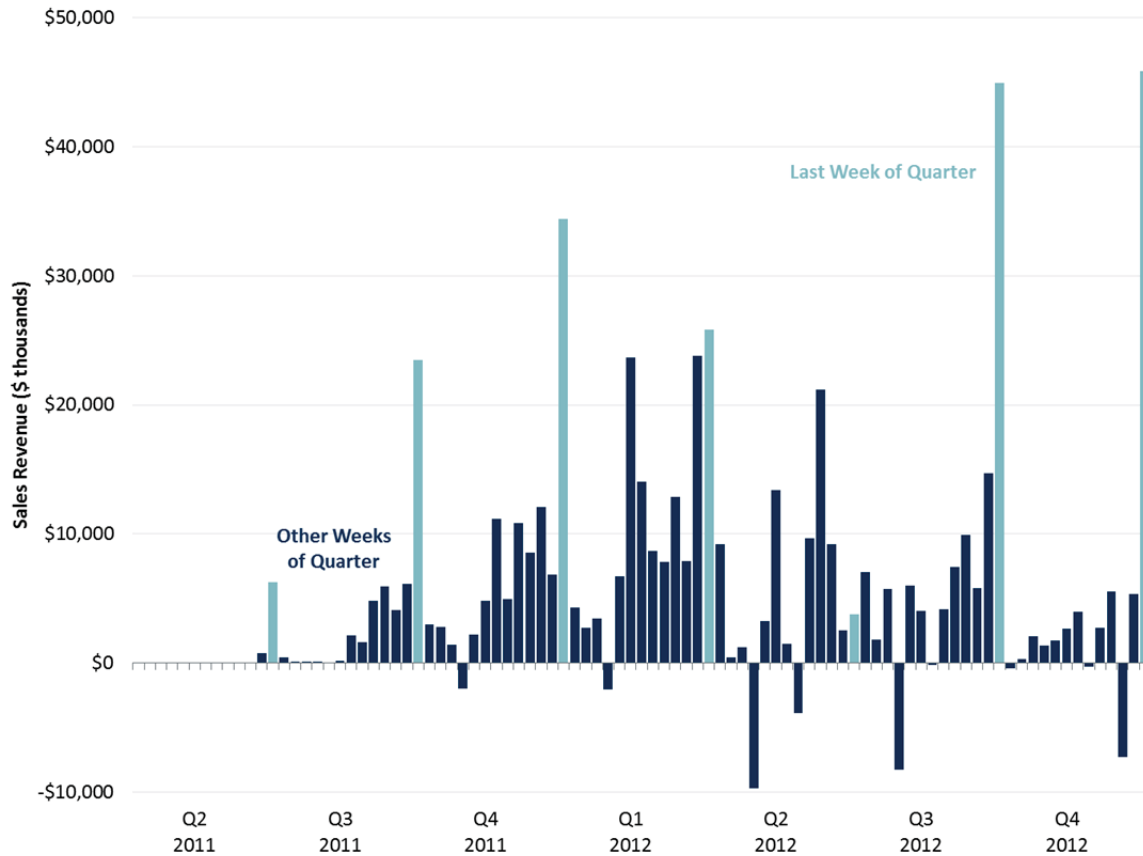


Source: AMD sales data [AMD-028-002325474].

Note: Sales with region labeled "not assigned" were assigned to regions, where possible, proportionately to the customer's overall regional distribution of sales in 2011-2012.

137. Figure 27 and Figure 28 show that Llano sales were characterized by a similar back-end loaded sales pattern.

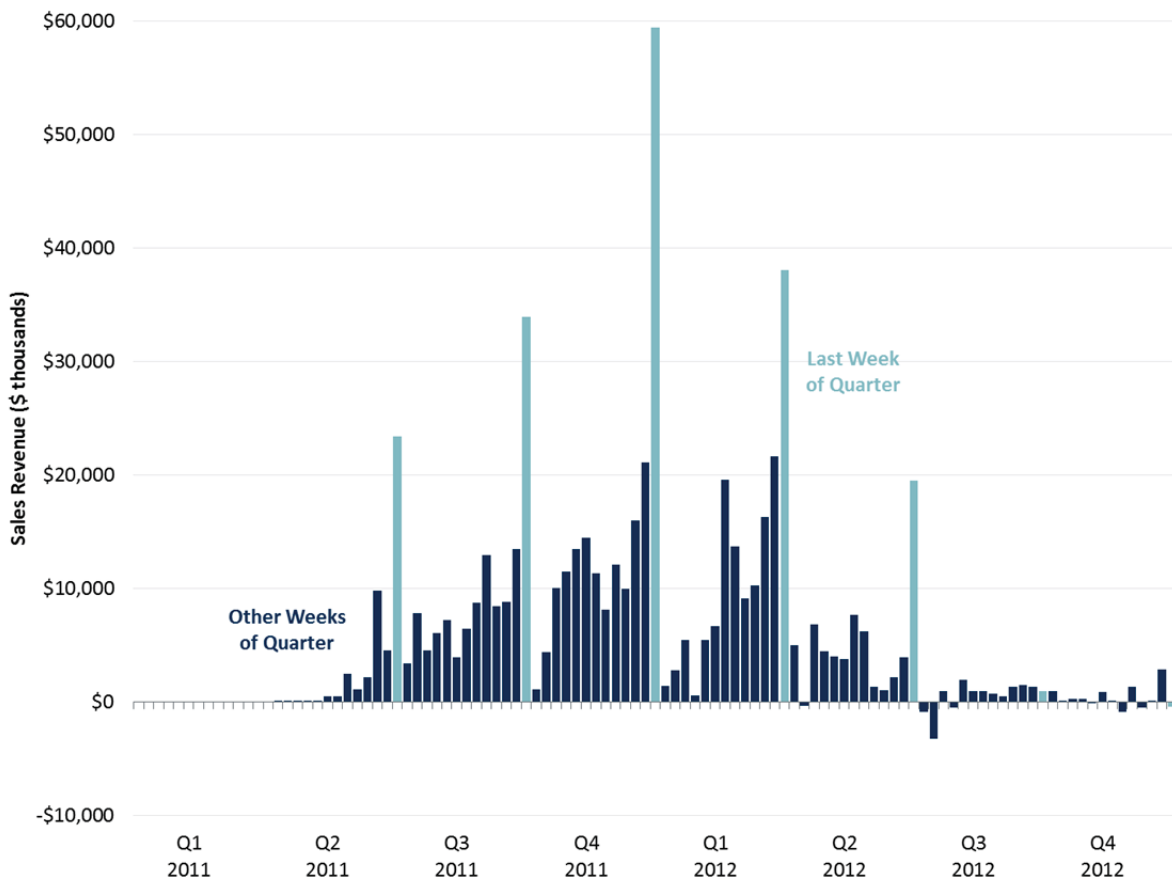
Figure 27
Weekly Sales of Llano to Channel Customers
2011-2012



Source: AMD sales data [AMD-028-002325474].

Note: Sales with region labeled "not assigned" were assigned to regions, where possible, proportionately to the customer's overall regional distribution.

Figure 28
Weekly Sales of Llano to OEMs for Mobile PCs in Greater China
2011-2012



Source: AMD sales data [AMD-028-002325474].

Notes: Sales with region labeled "not assigned" were assigned to regions, where possible, proportionately to the customer's overall regional distribution of sales in 2011-2012. AMD's sales to OEMs for the mobile PC market in other regions and for the desktop market did not display this back-end weighted sales pattern.

138. Figure 29, Figure 30, and Figure 31 show the progression of AMD's internal forecasts in Q3 2011, Q2 2012, and Q3 2012. The tables show that AMD's internal forecasts changed in the progress of each quarter, but because of the back-end loaded nature of AMD's sales, actual sales were sometimes significantly different from even the last forecast of each quarter, which occurred within the last month of the quarter. For example, for Q2 2012, as of June 10, 2012 (twenty days before the end of the quarter), AMD forecasted total microprocessor revenues of \$902 million (\$239 million of Llano sales and \$662 of non-Llano sales), but actually realized \$708

million of microprocessor revenues (\$189 million of Llano sales and \$519 million of non-Llano sales), a reduction of \$194 million, or 21 percent.

Figure 29
Internal Monthly Operating Forecasts of Microprocessor Revenues
Q3 2011
(\$ in thousands)

	Llano					Non-Llano				
	Forecast 6/11/2011	Forecast 7/8/2011	Forecast 8/8/2011	Forecast 9/2/2011	Q3 2011 Sales	Forecast 6/11/2011	Forecast 7/8/2011	Forecast 8/8/2011	Forecast 9/2/2011	Q3 2011 Sales
Channel	\$119,948	\$136,388	\$52,964	\$52,840	\$37,445	\$306,140	\$285,201	\$343,259	\$339,047	\$348,926
OEM	\$239,836	\$218,393	\$209,547	\$206,637	\$179,637	\$318,433	\$330,252	\$302,738	\$306,294	\$363,425
Total	\$359,784	\$354,781	\$262,510	\$259,477	\$217,083	\$624,573	\$615,453	\$645,998	\$645,342	\$712,351

Source: AMD sales data [AMD-028-002325474]; AMD forecasting data;^{334,335} AMD, Form 8-K, July 21, 2011; “AMD Announces Preliminary Third Quarter Results,” AMD, September 28, 2011. Note: Guidance for Q3 2011 was given on 7/21/2011. Updated guidance was given on 9/28/2011.

³³⁴ AMD forecasting data [AMD-015-001679889, AMD-015-001680262, AMD-003-000322424, AMD-003-000324003, AMD-003-000435154, AMD-008-001133287, AMD-003-000438492, AMD-008-001297157, AMD-002-000013039, AMD-003-000253449, AMD-003-000279558, AMD-016-001828980, AMD-003-000454099, AMD-003-000454185, AMD-003-000453547, AMD-003-000457125, AMD-003-000458827, AMD-003-000460384, AMD-003-000461027, AMD-003-000463038, AMD-003-000463774, AMD-003-000465277]. All references in this report to “AMD forecasting data” refer to these Bates ranges unless otherwise noted.

³³⁵ Observations were removed from the forecast data for the following reasons: if information was missing regarding which year or quarter was being forecasted, if the quarter being forecasted occurred after 2012, if customer class was listed as “Don’t Use-OEM Focus,” and if the market segment was anything other than desktop or mobile. For forecasts where distribution channel was listed as “NA,” customer class was used to determine distribution channel. Customers were classified as OEM if customer class was “OEM Emerging,” “OEM Principal,” or “OEM Strategic.” Remaining NAs were assigned to OEM if all assigned observations for that customer were listed as OEM; similarly, NAs for channel customers were assigned to channel.

Figure 30
Internal Monthly Operating Forecasts of Microprocessor Revenues
Q2 2012
(\$ in thousands)

	Llano					Non-Llano				
	Forecast 3/22/2012	Forecast 4/19/2012	Forecast 5/17/2012	Forecast 6/10/2012	Q2 2012 Sales	Forecast 3/22/2012	Forecast 4/19/2012	Forecast 5/17/2012	Forecast 6/10/2012	Q2 2012 Sales
Channel	\$131,518	\$116,540	\$103,078	\$102,042	\$76,280	\$261,074	\$276,081	\$278,993	\$259,329	\$172,394
OEM	\$127,009	\$136,382	\$130,848	\$137,299	\$112,337	\$408,732	\$397,308	\$401,828	\$402,970	\$346,959
Total	\$258,526	\$252,922	\$233,926	\$239,340	\$188,617	\$669,806	\$673,389	\$680,820	\$662,299	\$519,354

Source: AMD sales data [AMD-028-002325474], AMD forecasting data; AMD, Form 8-K, April 19, 2012; "AMD Announces Preliminary Second Quarter Results," AMD, Press Release, July 9, 2012.

Note: Guidance for Q2 2012 was given on 4/19/2012. Updated guidance was given on 7/9/2012.

Figure 31
Internal Monthly Operating Forecasts of Microprocessor Revenues
Q3 2012
(\$ in thousands)

	Llano					Non-Llano				
	Forecast 6/29/2012	Forecast 7/17/2012	Forecast 8/14/2012	Forecast 9/19/2012	Q3 2012 Sales	Forecast 6/29/2012	Forecast 7/17/2012	Forecast 8/14/2012	Forecast 9/19/2012	Q3 2012 Sales
Channel	\$66,010	\$78,228	\$76,420	\$80,815	\$96,188	\$228,201	\$175,860	\$191,858	\$182,651	\$146,632
OEM	\$46,870	\$39,102	\$63,896	\$36,560	\$27,601	\$484,753	\$421,381	\$377,605	\$358,602	\$345,844
Total	\$112,880	\$117,331	\$140,317	\$117,375	\$123,789	\$712,954	\$597,241	\$569,463	\$541,253	\$492,476

Source: AMD sales data [AMD-028-002325474], AMD forecasting data; AMD, Form 8-K, July 19, 2012; AMD, Form 8-K, October 11, 2012.

Note: Guidance for Q3 2012 was given on 7/19/2012. Updated guidance was given on 10/11/2012.

3. **AMD's Forecast Misses in Q2 2012 and Q3 2012 Were Consistent with Unexpected Changes in Macroeconomic and Industry Conditions and Not Specific to Llano or Channel Customers**

a. *AMD's Forecast Misses Were Consistent with Changes in Macroeconomic and Industry Conditions*

139. As a result of the deteriorating macroeconomic conditions and the shift toward handheld and tablet devices, industry analysts and AMD revised downward their forecasts for Q2 2012 and Q3 2012.³³⁶ For instance, IDC released forecasts of global PC shipments on a quarterly basis.³³⁷ As shown in Figure 32, at the end of Q1 2012, IDC expected PC shipments in Q3 2012 to grow by 12.2 percent. However, by the end of Q2 2012, IDC instead projected growth of 8.1 percent, a downward forecast revision of over four percent. Actual growth was less than half of that projection.

³³⁶ “Cuts During 3Q12 Earnings Worse Than Feared, But Low Inventory and High Leverage Keep Us Positive,” *JP Morgan*, November 8, 2012 [AMD-021-002260096], p. 1 (“PC end market is weakest. Demand from the PC end market remains weakest due to soft global demand and share loss to tablets...As a result, we expect soft PC demand to continue to weigh on AMD (90% of sales from the PC end market), INTC (85%), and ISIL (20%) in 4Q12.”); “Y/Y Declines Persist, Waiting for Inflection,” *Barclays*, October 3, 2012 [AMD-021-002245615], p. 1 (“We continue to see a slowdown in end market demand across the board led by Computing which remains under pressure as mobile devices continue to take share from PC’s [sic] (Computing revs -20% Y/Y and Consumer posting negative Y/Y comps after six months of conservative growth in line with overall weak back-to-school demand trends.”); “PC Demand Falling Off a Cliff – AMD Negatively Pre-Announces 3Q12 Results Well Below Expectations,” *JP Morgan*, October 12, 2012 [AMD-021-002259985], p. 1 (“AMD lowered its 3Q12 revenue guidance from down 1% QoQ (\$1.40 billion) to down 10% QoQ (\$1.27 billion), below consensus of down 3% QoQ (\$1.38 billion) and our recently lowered estimate of down 8% QoQ (\$1.30 billion) are due to soft PC demand and macro weakness.”); “Inventory Correction and Macro Issues Loom Large. Lowering Estimates and Reiterate Neutral,” *JP Morgan*, July 20, 2012 [AMD-021-002260341], p. 1 (“AMD guided 3Q12 revenue to a range of \$1.36-\$1.44 billion (down 4% to up 2% QoQ), well below normal seasonality of up 12% QoQ and our previous estimate of \$1.45 billion due to share loss and slowing PC demand. We expect revenue to decrease 1% QoQ to \$1.40 billion during 3Q12...AMD’s print and lower guidance follows a slew of companies across the PC food chain that lowered guidance for both 2Q12 and 3Q12...we expect the PC end market to remain soft throughout 2H12 due to macro weakness and demand loss to tablets.”).

³³⁷ IDC WW Quarterly PC Tracker Data, “2010Q3-2016Q1 forecast PC.XLSX”.

Figure 32
IDC, Forecasts of Growth in PC Shipments, Quarter-over-Quarter

Quarter Forecast Issued	Projected Growth	
	Q2 2012	Q3 2012
Q4 2011	5.9%	15.1%
Q1 2012	-0.3%	12.2%
Q2 2012	-	8.1%
Actual	-3.5%	3.3%

Sources: IDC WW Quarterly PC Tracker Data, “2010Q3-2016Q1 forecast PC.XLSX”; IDC WW Quarterly PC Tracker Data, Published August 10, 2016.

140. Figure 33 illustrates AMD’s internal sales forecasts in Q2 2012 and Q3 2012, respectively. Figure 33 is inconsistent with Plaintiffs’ allegations that “Defendants knew or were reckless in not knowing [that] supply and demand issues resulting from the yield and manufacturing problems” in 2011 would result in missing Q2 2012 and Q3 2012 guidance.³³⁸ Figure 33 demonstrates that, like IDC in both Q2 and Q3 2012, AMD generally revised its internal forecasts downward, but that even AMD’s *internal* sales forecasts, including those prepared with just weeks left in each quarter, continued to project microprocessor sales significantly in excess of sales that actually occurred. In other words, AMD’s own internal forecasts show that, contrary to Plaintiffs’ claims, AMD did not know that Q2 and Q3 2012 sales would be lower than forecasted until the end of each quarter, much less in 2011.

³³⁸ See e.g., Coffman Report, ¶107.

Figure 33
AMD MPU Forecast Revisions and Cumulative Sales
(\$ thousands)

Forecast Version	Q2 2012		Q3 2012	
	Date of Forecast	Total Sales Forecast	Date of Forecast	Total Sales Forecast
	[1]	[3]	[4]	[5]
M0	3/22/2012	\$928,333	6/29/2012	\$825,834
M1	4/19/2012	\$926,311	7/17/2012	\$714,571
M2	5/17/2012	\$914,746	8/14/2012	\$709,780
M3	6/10/2012	\$901,640	9/19/2012	\$658,628
Actual Sales		\$707,662	\$616,265	

Sources: AMD forecasting data [AMD-003-000453547, AMD-003-000457125, AMD-003-000458827, AMD-003-000460384, AMD-003-000322424, AMD-003-000324003, AMD-003-000435154, AMD-008-001133287]; AMD sales data [AMD-028-002325474]. Notes:

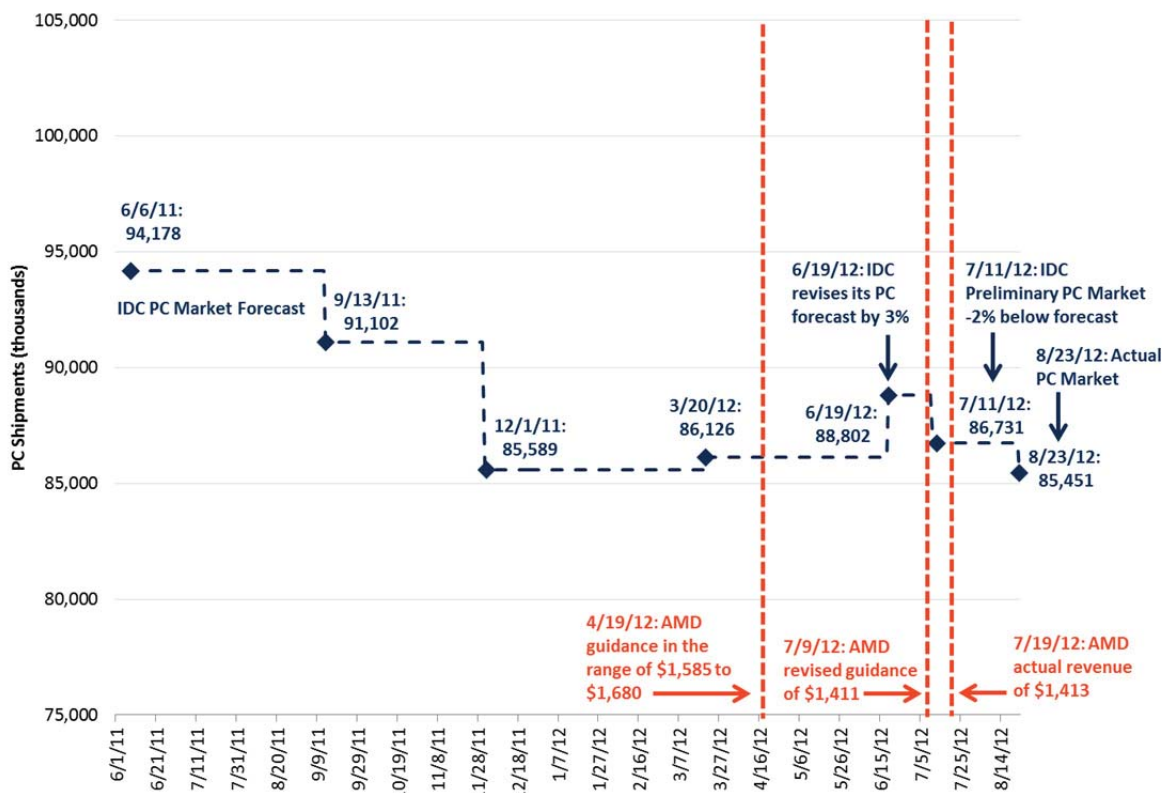
[1]: M0 is made the month before the quarter begins. M1, M2, and M3 are made the first, second, and third month of the quarter respectively.

[2], [4]: Date of forecast is the date provided in the raw data file. If no date is given, date of forecast is determined by the corresponding email and attachment, where available, or workweek and AMD supply chain report.

[3], [5]: Total quarterly forecast for AMD revenue within the Desktop and Mobile market segments.

141. Moreover, for Q2 2012, Figure 34 shows AMD revised its guidance downward within days of IDC's announcement that actual global PC shipments were 2 percent below its previous forecast.

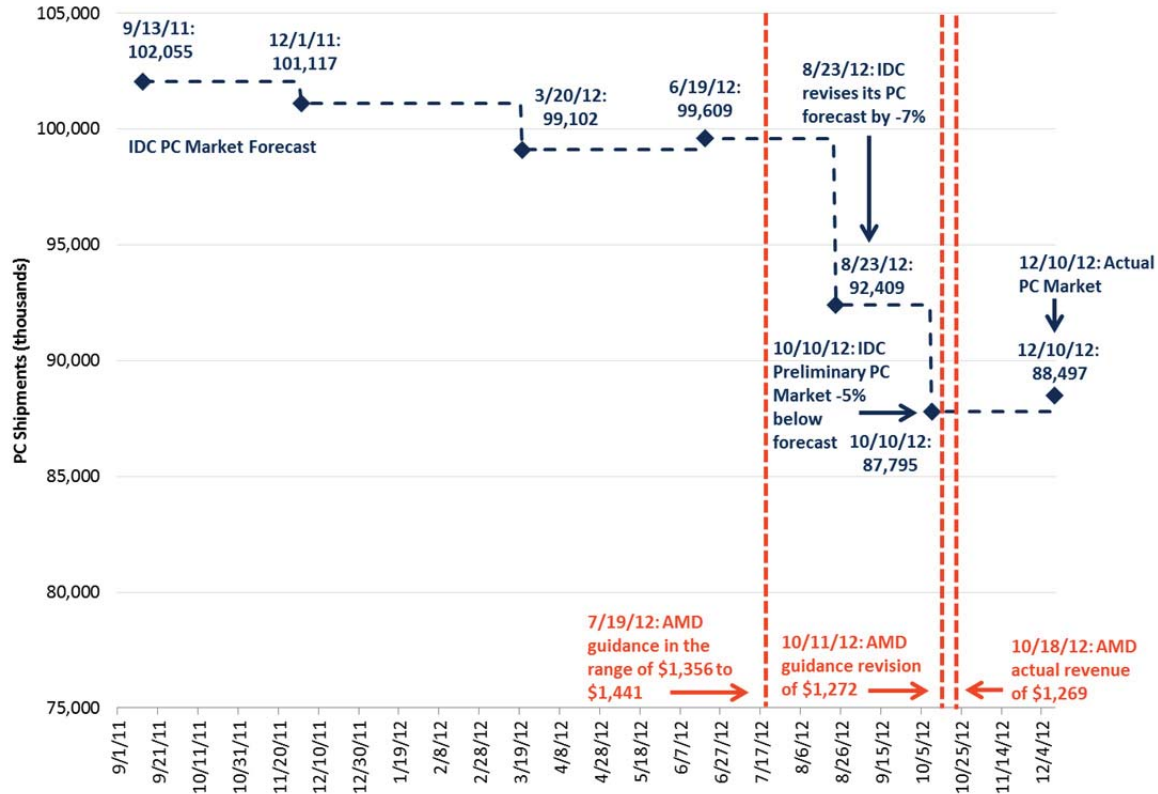
Figure 34
Timeline of Key Forecast Revisions
Q2 2012



Sources: Bloomberg LP; AMD, Form 8-K, April 19, 2012; AMD, Form 8-K, July 19, 2012; "AMD Announces Preliminary Second Quarter Results," AMD, Press Release, July 9, 2012; IDC WW Quarterly PC Tracker Data, "2010Q3-2016Q1 forecast PC.XLSX".

142. Figure 35 shows that AMD revised its guidance downward on October 11, 2012, one day after IDC indicated that actual global PC shipments fell 5 percent below its previous forecast.

Figure 35
Timeline of Key Forecast Revisions
Q3 2012



Sources: Bloomberg LP; AMD, Form 8-K, July 19, 2012; AMD, Form 8-K, October 11, 2012; AMD, Form 8-K, October 18, 2012; IDC WW Quarterly PC Tracker Data, "2010Q3-2016Q1 forecast PC.XLSX".

143. Despite AMD's and IDC's downward revisions to their forecasts, a comparison of AMD's and IDC's Q2 2012 and Q3 2012 forecasts to AMD's actual sales and global PC shipments proves that both IDC and AMD were surprised by the downturn in the PC market.³³⁹ Figure 36

³³⁹ Deposition of Rory Read, July 29, 2016, p. 320:1-10 ("Then a real big event occurred as we went through it and we were gathering this data and learning. In the second quarter we began to see this huge slowdown in the middle part of the quarter. Unprecedented. We didn't know if it was a blip or not, but through the end of the quarter, we saw this dramatic trail-off in business. And that ultimately became basically a four-year impact to the PC industry that's still going on today."). Email from Eugene Kiang

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summarizes AMD's guidance regarding year-over-year growth in revenues, and IDC's forecasts regarding year-over-year growth in shipments for Q2 2012 and Q3 2012. Actual performance undershot both AMD's and IDC's predictions. For Q2 2012, overall PC and notebook shipments were 0.7 and 6.0 percent, respectively, lower than IDC forecasted at the beginning of each quarter, respectively, and AMD revenues were 10.9 percent below the low end of its initial guidance range. For Q3 2012, overall PC and notebook shipments were 11.8 and 13.5 percent lower than IDC had forecast at the beginning of each quarter, respectively, and AMD revenues were 5.2 percent below the low end of its initial guidance range.

Figure 36
Forecast Comparison, Year-over-Year Growth Rates
Q2 and Q3 2012

		Q2 2012				Q3 2012			
		AMD Revenue Guidance Upside	AMD Revenue Guidance Downside	IDC PC Shipments	IDC Notebook Shipments	AMD Revenue Guidance Upside	AMD Revenue Guidance Downside	IDC PC Shipments	IDC Notebook Shipments
Beginning of Quarter Projected YoY Growth	[1]	6.7%	0.7%	-0.9%	6.1%	-14.7%	-19.7%	3.7%	6.3%
End of Quarter Actual YoY Growth	[2]	-10.2%	-10.2%	-1.6%	0.0%	-24.9%	-24.9%	-8.1%	-7.1%
Difference	[3]	-17.0%	-10.9%	-0.7%	-6.0%	-10.2%	-5.2%	-11.8%	-13.5%

Sources: Bloomberg LP; AMD, Form 8-K, July 19, 2012; AMD, Form 8-K, April 19, 2012; IDC WW Quarterly PC Tracker Data, "2010Q3-2016Q1 forecast PC.XLSX".

Notes: AMD revenue guidance is approximately plus or minus three percent and two-and-half percent, respectively, in Q2 and Q3 2012.

[3]: [2] – [1].

144. The downturn in the PC market had a greater impact on AMD relative to the overall PC market in Q2 2012 because of AMD's disproportionate exposure to the low-end notebook market. Figure 37 shows the distribution of PC prices in the notebook market. As shown in Figure 37, sales of notebook PCs with AMD's chips (shown in red) were mostly at low-end price points in the range of \$300 to \$600, [REDACTED]. Sales of all

Continued from previous page

[channel customer] to Darren Grasby, May 23, 2012 [AMD-003-000263364] ("In my twenty one years in this business, I have not seen a more challenging quarter than this one... With the current market conditions, it is impossible for me to liquidate the remaining parts fast enough to meet [Ingram and Avnet's] demands.").

notebook PCs were across a much wider price range – mostly in the \$400 to \$1,200 range [REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

Figure 37
Distribution of Revenue in the Global Notebook Market by Price
2011 - 2012



145. Figure 38 shows the year-over-year growth rates in shipments of notebook PCs between 2011 and 2013, broken down by price point. The gray line shows the growth rate in the number of notebooks sold at a price of less than \$500. As shown in Figure 38, 2011 saw a very high growth rate in shipments of these low-end notebook PCs, peaking at nearly 25 percent in Q1 2012. The overall notebook market (shown in light blue), however, had far more modest growth, peaking at approximately 4 percent in Q3 2011 and actually shrinking slightly in Q4 2011. Starting in Q1 2012, the growth rate in sales of low-end notebooks dropped dramatically from nearly 25 percent in Q4 2011 to a slightly negative amount (indicating a shrinking market) in Q3 2012. The drop in the growth rate in sales of premium notebooks was much less severe. Because AMD's sales of chips for notebook PCs were disproportionately for low-end PCs, the

greater severity of the decline in the growth rate for low-end notebooks relative to the decline in the growth rate for premium notebooks resulted in a more severe impact on AMD's sales, as compared to sales in the broader market.

Figure 38
Year-over-Year Growth Rates for Notebook Revenue, by Price Point
Q1 2011 – Q4 2013



b. AMD's Forecast Miss in Q2 2012 Was Across Multiple Products, and Not Specific to Llano

146. Although Plaintiffs allege that AMD missed its Q2 2012 forecast primarily due to lower-than-forecasted Llano sales to the channel, Plaintiffs' allegation is not consistent with AMD's actual sales data. Figure 39 shows that, contrary to Plaintiffs' allegation, other factors likely had a much greater impact on the sales miss. Figure 39 shows that (1) AMD's sales miss was largely in non-Llano products, (2) a significant portion of the sales miss was related to OEMs, not channel customers, indicating overall weakness in the PC market, not specific weakness attributable to channel customers, and (3) channel customers purchased less-than-forecasted

amounts of both Llano and non-Llano products, indicating overall weakness in sales to the channel, not specific weakness attributable to Llano.

Figure 39
Forecasted Sales vs. Actual Sales
Q2 2012
(\$ in thousands)

	Llano			Non-Llano		
	Forecast 4/19/2012	Q2 2012 Sales	Difference	Forecast 4/19/2012	Q2 2012 Sales	Difference
Channel	\$116,540	\$76,280	-\$40,260	\$276,081	\$172,394	-\$103,687
OEM	\$136,382	\$112,337	-\$24,045	\$397,308	\$346,959	-\$50,348
Total	\$252,922	\$188,617	-\$64,305	\$673,389	\$519,354	-\$154,035

Source: AMD sales data [AMD-028-002325474], AMD forecasting data; AMD, Form 8-K, April 19, 2012; "AMD Announces Preliminary Second Quarter Results," AMD, Press Release, July 9, 2012.

Note: Guidance for Q2 2012 was given on 4/19/2012. Updated guidance was given on 7/9/2012.

147. AMD's sales of non-Llano products were \$154 million lower than its forecast, compared to a \$64 million shortfall of sales of Llano products, suggesting that 71 percent of the total sales miss of \$218 million was attributable to non-Llano products.

148. A significant portion of the sales miss was related to OEMs, not the channel. AMD's sales to OEMs fell short by \$74 million, or 34 percent, of the total sales miss of \$218 million. However, contrary to Dr. Thompson's allegation that the 2011 Llano supply issues resulted in "[d]amaged AMD and Llano brand credibility"³⁴⁰ with OEM customers, Mr. Tony Prophet, HP's Senior Vice President of Operations, Printing and Personal Systems, during the Class Period, explained that AMD's relationships with HP were larger than any one product, and, indeed, Llano supply issues did not result in any deterioration of the HP-AMD relationship.³⁴¹

³⁴⁰ Thompson Report, ¶20.

³⁴¹ Deposition of Tony Prophet, August 12, 2016, pp. 238:14-239:15 ("Q. ... In your role at HP did you purchase chips from AMD other than Llano during the period we've been discussing today? A. ...Yes Q. Okay. And as best as you can recall during your tenure at HP did you purchase chips from AMD other than Llano after the period we've been discussing today? A. Yes. Q. Okay. And so it's fair to say then that

Continued on next page

149. Rather, as discussed above, the overall PC market, including sales of PCs by OEMs, suffered from a deterioration of global macroeconomic conditions and a shift from PCs to handheld mobile devices. As a result, AMD's sales to both its channel and OEM customers suffered. As AMD explained in its Q2 2012 earnings conference call, AMD experienced "a soft consumer PC market that impacted OEM notebook processor sales."³⁴² In particular, AMD experienced "late-quarter softness at HP and Acer" as drivers of declining OEM shipments.³⁴³ In addition, AMD had expected purchases from HP and Dell that did not materialize.³⁴⁴

150. [REDACTED]

Continued from previous page

the relationship between HP and AMD is larger than any one particular product? A. Or any point in time, yes. Q. Okay. And each purchasing decision that HP makes is based on a number of factors that include the price and function of a given product? A. Among other factors, yes. Q. Do you recall believing at any point in time that the relationship between HP and AMD was irreparably harmed as a result of some of the supply issues we've been discussing today? A. No.").

³⁴² AMD, Q2 2012 Earnings Conference Call (Rory Read), July 19, 2012, p. 3 ("This second-quarter revenue shortfall was largely driven by two key factors -- first, weak sales of desktop processors in the channel, primarily in China and Europe; and, secondly, a soft consumer PC market that impacted OEM notebook processor sales.").

³⁴³ AMD, Q2 2012 Global Business Unit Review [AMD-002-000011457], p. 7.

³⁴⁴ AMD, CEO/CFO Report to AMD Board of Directors, July 2012 [AMD-004-000547113], p. 2 ("Q2'12 Revenue closed at \$1,413M vs. the preliminary estimate of \$1,437M (2012 Q'12 AOP of \$1,653M and Analysts estimates of \$1,635M). \$16M of the shortfall from the preliminary estimate was due to lower resales from the channel (Americas, EMEA, and Asia Pacific) and \$7M due to expected hub pulls from HP and Dell that did not occur.").

Figure 40
Quarterly Notebook Sales by OEM, LTM
Q1 2007 – Q4 2015



151. AMD's sales miss attributable to non-Llano products (\$150 million) and OEM sales of Llano products (\$15 million), equals 75 percent of AMD's total sales miss of \$221 million, suggesting that 75 percent of AMD's sales miss had nothing to do with Plaintiff's allegation of lower-than-forecasted Llano sales to the channel.

152. AMD's sales to OEM and channel customers also fell short for both Llano *and* non-Llano products. In fact, AMD missed its forecast of non-Llano products to OEM and channel customers by \$150 million, over twice as much as its sales miss for Llano products. This pattern is indicative of overall weakness in the PC market, not of particular weakness in Llano.

153. As AMD explained in its Q2 2012 earnings conference call, AMD experienced "weak sales of desktop processors in the channel, primarily in China and Europe."³⁴⁵ Those regions

³⁴⁵ AMD, Q2 2012 Earnings Conference Call (Rory Read), July 19, 2012, p. 3; *See also*, "Notes From Asia – Win8 Does Not Look Like a Winner," *BMO Capital Markets*, June 25, 2012 [AMD-021-002250157], p. 1 ("...the PC market remains very weak. We believe that weak demand in all regions persist, with various

Continued on next page

accounted for \$83 million, or 58 percent, of AMD's total sales miss for channel customers of \$144 million,³⁴⁶ reflecting slowing GDP growth in China and the Eurozone crisis.³⁴⁷ Along with China and EMEA, AMD also experienced decreased desktop channel sales in "AMR" which includes North America and Latin America.³⁴⁸

c. AMD's Forecast Miss in Q3 2012 Was in Non-Llano Products

154. Figure 41 shows, for Q3 2012, AMD's revenue forecast as of July 17, 2012 and actual sales. Plaintiffs' allegation that AMD missed its Q3 2012 forecast primarily due to lower-than-forecasted Llano sales to channel customers is not consistent with AMD's actual sales data. Contrary to Plaintiffs' allegation, Figure 41 shows that (1) AMD's sales miss was largely in non-Llano products, (2) channel customers' purchases of Llano products *exceeded* forecasted amounts, and (3) a significant portion of the sales miss was related to OEMs, not channel customers, indicating overall weakness in the PC market, not specific weakness attributable to channel customers.

Continued from previous page

contacts suggesting Europe and China have become incrementally weaker in the past few months. We also think that PC growth in India has slowed.”).

³⁴⁶ Counsel has advised me that the regions in the forecast data and actuals sales data are not aligned for OEMs, so I do not break down the forecast data and actual sales data into regions for OEMs. Counsel has advised me that the regions in both data sets are aligned for channel customers.

³⁴⁷ “AMD Announces Preliminary Second Quarter Results,” AMD, Press Release, July 9, 2012 (“AMD (NYSE: AMD) today announced that revenue for the second quarter ended June 30, 2012 is expected to decrease approximately 11 percent sequentially. The company previously forecasted second quarter 2012 revenue to increase 3 percent, plus or minus 3 percent sequentially. The lower preliminary revenue results are primarily due to business conditions that materialized late in the second quarter, specifically softer-than-expected channel sales in China and Europe as well as a weaker consumer buying environment impacting the company's Original Equipment Manufacturer (OEM) business.”).

³⁴⁸ AMD, Q2 2012 Global Business Unit Review [AMD-002-000011457], p. 2.

Figure 41
Forecasted Sales vs. Actual Sales
Q3 2012
(\$ in thousands)

	Llano			Non-Llano		
	Forecast 7/17/2012	Q3 2012 Sales	Difference	Forecast 7/17/2012	Q3 2012 Sales	Difference
Channel	\$78,228	\$96,188	\$17,960	\$175,860	\$146,632	-\$29,228
OEM	\$39,102	\$27,601	-\$11,501	\$421,381	\$345,844	-\$75,537
Total	\$117,331	\$123,789	\$6,459	\$597,241	\$492,476	-\$104,765

Source: AMD sales data [AMD-028-002325474]; AMD forecasting data; AMD, Form 8-K, July 19, 2012; AMD, Form 8-K, October 11, 2012.

Note: Guidance for Q3 2012 was given on 7/19/2012. Updated guidance was given on 10/11/2012.

155. AMD's sales of non-Llano products missed AMD's forecast by \$105 million. By contrast, AMD sales of Llano products *exceeded* its forecast by \$6 million. Additionally, Llano channel sales *exceeded* expectations by \$18 million. In an internal document, AMD indicated that regarding desktop channel revenue, "Llano No-GPUs and Llano APUs continued to ship in healthy volumes," and that Llano APU unit and revenue sales increased from Q2 2012 in the channel.³⁴⁹

156. AMD's Q3 2012 sales miss was largely related to OEMs, not channel customers. AMD's sales to OEMs fell short of internal forecasts by \$87 million, or 89 percent, of the total sales miss of \$98 million. As discussed above, OEMs' reduced purchases were not a result of allegedly damaged relationships. Rather, as illustrated in Figure 40 above, several of AMD's OEM customers, including HP, Acer, Toshiba, and Dell, experienced declines in PC sales throughout 2012 which were attributable to overall market forces, not 2011 Llano supply issues. In its Q3 2012 earnings conference call, AMD explained that OEM sales were being impacted by "macroeconomic issues," the "Windows 8 launch," and cannibalization of PCs by tablets.³⁵⁰

³⁴⁹ AMD, Q3 2012 Global Business Unit Review [AMD-016-001769594], pp. 3, 8.

³⁵⁰ AMD, Q3 2012 Earnings Conference Call (Rory Read), October 18, 2012, p. 3 ("Broader macroeconomic issues are impacting consumer PC spend. OEMs are also taking a cautious approach to managing inventory in advance of the Windows 8 launch, and tablets continue to grow as a consumer device of

Continued on next page

Similarly, in an internal document, AMD noted that the decline in desktop OEM revenue was “driven by PC market softness, [and] OEMs balancing their inventory on anticipation of Win8 launch in Q4... .”³⁵¹

157. AMD also experienced a decline in notebook and desktop ASPs related to top OEM customers including HP, Samsung, Toshiba, Lenovo, and Acer.³⁵² While AMD noted in an internal document that the desktop OEM miss and notebook OEM declines were in part due to “declines in the sale of Llano,” including a movement to Trinity,³⁵³ other non-Llano products such as Ontario and Bloodhound were also cited as largely driving down OEM revenues.³⁵⁴

Continued from previous page

choice. As a result, we face a very challenging selling environment, especially in the lower end of the consumer client space.”); p. 4 (“Shortly after joining AMD I talked about the fundamental changes occurring in the PC industry. These trends are occurring now at an even faster rate than previously anticipated.”).

³⁵¹ AMD, Q3 2012 Global Business Unit Review [AMD-016-001769594], p. 12.

³⁵² AMD, Q3 2012 Global Business Unit Review [AMD-016-001769594], p. 2.

³⁵³ AMD, Q3 2012 Global Business Unit Review [AMD-016-001769594], pp. 2-3.

³⁵⁴ AMD, Q3 2012 Global Business Unit Review [AMD-016-001769594], p. 8.

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RESEARCH INTERESTS

Innovation, Technology Management and Strategy, Industry Evolution, Firm Boundaries,
Business Ecosystems

EDUCATION

- 2008 Ph.D. in Management, INSEAD, France
- 2006 M.Sc. in Management, INSEAD, France
- 2002 M.B.A., National University of Singapore, Singapore
- 1997 B.A.Sc., Materials Engineering (First Class Honors), Nanyang Technological University, Singapore

ACADEMIC APPOINTMENT

The Wharton School, University of Pennsylvania
Associate Professor of Management (with tenure), 2015-Present
Assistant Professor of Management, 2008-2015

RESEARCH AND PUBLICATIONS

A. Papers in Refereed Journals

- [1] Rahul Kapoor and Shiva Agarwal (2016), “Sustaining Superior Performance in Business Ecosystems: Evidence from Application Software Developers in the iOS and Android Smartphone Ecosystems.” Conditionally Accepted, *Organization Science*.
- [2] Ron Adner and Rahul Kapoor (2016), “Innovation Ecosystems and the Pace of Substitution: Re-examining Technology S-curves,” *Strategic Management Journal*, 37(4): 625-648.
 - Lead Article
- [3] Rahul Kapoor and Thomas Klueter (2015), “Decoding the Adaptability-Rigidity Puzzle: Evidence from Pharmaceutical Incumbents’ Pursuit of Gene Therapy and Monoclonal Antibodies,” *Academy of Management Journal*, 58(4): 1180-1207.
 - Top 3 paper published in *Academy of Management Journal*, 2016
 - Best Paper Award in Innovation Management - second prize, 2014
 - Giarratani Rising Star Award - finalist, Industry Studies Association, 2014

- [4] Rahul Kapoor and Nathan Furr (2015), “Complementarities and Competition: Unpacking the Drivers of Entrants' Technology Choices in the Solar Photovoltaic Industry,” *Strategic Management Journal*, 36(3): 416-436.
- [5] Rahul Kapoor and Patia J. McGrath (2014), "Unmasking the Interplay between Technology Evolution and R&D Collaboration: Evidence from the Global Semiconductor Manufacturing Industry, 1990-2010," *Research Policy*, 43(3): 555-569.
- [6] Rahul Kapoor (2013), “Persistence of Integration in the Face of Specialization: How Firms Navigated the Winds of Disintegration and Shaped the Architecture of the Semiconductor Industry,” *Organization Science*, 24(4): 1195-2013.
- [7] Rahul Kapoor and Joon Mahn Lee (2013), “Coordinating and Competing in Ecosystems: How Organizational Forms Shape New Technology Investments,” *Strategic Management Journal*, 34(3): 274-296.
 - Best Paper Proceedings, Academy of Management Annual Meeting, 2010
- [8] Rahul Kapoor (2013), “Collaborating with Complementors: What do Firms do?” *Advances in Strategic Management*, 30: 3-25.
 - Lead Article, Annual Volume on “Collaboration and Competition in Business Ecosystems.”
- [9] Rahul Kapoor and Ron Adner (2012), “What Firms Make vs. What They Know: How Firms’ Production and Knowledge Boundaries Affect Competitive Advantage in the Face of Technological Change,” *Organization Science*, 23(5): 1227-1248.
 - Lead Article, Special Issue on “Organizational Economics and Organizational Capabilities: From Opposition and Complementarity to Real Integration.”
 - INFORMS-Industry Studies Association Best Paper Prize - first runner-up, 2013
 - Best Paper Award in Innovation Management - second prize, 2013
 - Best Paper Proceedings, Academy of Management Annual Meeting, 2008
- [10] Ron Adner and Rahul Kapoor (2010), “Value Creation in Innovation Ecosystems: How the Structure of Technological Interdependence Affects Firm Performance in New Technology Generations,” *Strategic Management Journal*, 31(3): 306-333.
 - Highly Cited Paper, Thomson Reuters Citation Index (Top 1% of the academic field of Economics & Business).
- [11] Rahul Kapoor and Kwanghui Lim (2007), “The Impact of Acquisitions on the Productivity of Inventors at Semiconductor Firms: A Synthesis of Knowledge-Based and Incentive-Based Perspectives,” *Academy of Management Journal*, 50(5): 1133-1155.
 - Best Paper Proceedings, Academy of Management Annual Meeting, 2005
 - Carolyn Dexter Award Nominee, Academy of Management Annual Meeting, 2005

B. Other Research Awards

- Emerging Scholar Award, Academy of Management Technology and Innovation Management (TIM) Division, 2011

- Dorinda and Mark Winkelman Distinguished Scholar Award, The Wharton School, 2011
- Sloan Industry Studies Best Dissertation Award - finalist, 2008

C. Other Published Papers

- [12] Rahul Kapoor and Thomas Klueter (2017), “Organizing for New Technologies,” *MIT Sloan Management Review*, 58(2): 85-86
- [13] Ron Adner and Rahul Kapoor (2016), “Right Tech, Wrong Time: How to Make Sure That Your Ecosystem is Ready for the Newest Technologies,” *Harvard Business Review*, November: 60-67
- [14] Rahul Kapoor and Ron Adner (2007), “Technology Interdependence and the Evolution of Semiconductor Lithography,” *Solid State Technology*, 50(11): 51-54.

D. Reports and Other Materials

- [15] Rahul Kapoor and Andrew Kohm (2012), “Tesla Motors Inc.” Wharton Case Study #84.
- [16] Rahul Kapoor (2012), “Managing Complexity and Change in the Semiconductor Ecosystem: A Report on the Findings from the Wharton-ATREG Industry Study.”
- [17] Rahul Kapoor (2011), “Collaborative Innovation in the Global Semiconductor Industry: A Report on the Findings from the 2010 Wharton-GSA Semiconductor Ecosystem Survey.”
- [18] Rahul Kapoor, Daniel Levinthal, and Dalglish Chew (2009), “E-Books in 2009: Did the Long Heralded Revolution Finally Arrive?” Wharton Case Study #48.

E. Working Papers

- [19] Joon Mahn Lee and Rahul Kapoor, “Strategy-Governance Fit: Product Scope, Governance Mode and Firm Performance.”
- [20] Nathan Furr and Rahul Kapoor, “Capabilities, Technologies, and Firm Survival During Industry Shakeout: Evidence from the Global Solar Photovoltaic Industry.”
- [21] John Eklund and Rahul Kapoor, “Uncovering an Incumbency Paradox: Firms with the Greatest Need to Change Face the Greatest Stock Market Pressure to Conform.”
- [22] Rahul Kapoor and Thomas Klueter, “Progress and Setbacks: The Two Faces of Technology Emergence.”

F. Research in Progress

- Organizing for Complements (with Olivier Chatain)
- Technological Complementarities in Business Ecosystems (with Shiva Agarwal)
- Evolution of the Solar Photovoltaic Industry (with Nathan Furr)
- Innovation in Ecosystems (with Martin Ganco and Gwendolyn Lee)
- Technology Forecasting (with John Paul MacDuffie)

G. Invited Seminars

- Harvard University, 2017 (scheduled)
- Duke University, 2017 (scheduled)
- University of Southern California, 2017 (scheduled)
- University of Illinois at Urbana-Champaign, 2016
- University of Texas at Austin, 2016
- University of Michigan, 2013, 2016
- Imperial College London, 2014
- INSEAD, 2014
- Temple University, 2014
- Purdue University, 2013
- Bocconi University, 2013
- Northwestern University, 2013
- London Business School, 2008, 2012, 2013
- Seoul National University, 2013
- Stanford University, 2012
- Drexel University, 2012
- University of Cambridge, 2012
- City University London, 2012
- Wharton School Bowman Seminar, 2010, 2012
- Wharton School Evolution of Organizations and Industries Seminar, 2010
- University of Melbourne, 2010
- National University of Singapore, 2005, 2008, 2010
- Boston University, 2008
- New York University, 2008
- Singapore Management University, 2008
- University of California (Los Angeles), 2008
- University of Maryland, 2008
- University of Pennsylvania, 2008
- University of Washington, 2008

H. Conference Presentations

Rahul Kapoor and Shiva Agarwal, “Sustaining Superior Performance in Business Ecosystems: Evidence from Application Software Developers in the iOS and Android Smartphone Ecosystems.”

- Evolutionary Perspectives on Strategy, Stanford University, 2016
- IESE Strategy and Entrepreneurship Winter Mini-Conference, Barcelona, Spain, 2014
- Academy of Management Annual Meeting, Philadelphia, PA, 2014
- Atlanta Competitive Advantage Conference, Atlanta, GA, 2014

Rahul Kapoor and Thomas Klueter, “Decoding the Adaptability-Rigidity Puzzle: Evidence from Pharmaceutical Incumbents’ Pursuit of Gene Therapy and Monoclonal Antibodies.”

- Industry Studies Conference, Portland, OR, 2014
- Academy of Management Annual Meeting, Orlando, FL, 2013

Rahul Kapoor and Nathan Furr, “Complementarities and Competition: Unpacking the Drivers of Entrants' Technology Choices in the Solar Photovoltaic Industry.”

- BYU/University of Utah Winter Strategy Conference, Salt Lake City, UT, 2013
- West Coast Research Symposium on Technology Entrepreneurship, Seattle, WA, 2013

Rahul Kapoor, “Persistence of Integration in the Face of Specialization: How Firms Navigated the Winds of Disintegration and Shaped the Architecture of the Semiconductor Industry.”

- Industry Studies Conference, Pittsburgh, PA, 2012
- Columbia Business School Strategy Conference, 2011
- University of Maryland Smith Entrepreneurship Research Conference, 2011
- Symposium on Causes, Consequences and Limits of Vertical Disintegration, Academy of Management Annual Meeting, San Antonio, TX, 2011

Ron Adner and Rahul Kapoor, “Innovation Ecosystems and the Pace of Substitution: Re-examining Technology S-curves.”

- Symposium on the Complicated Life of Technology Transitions, Academy of Management Annual Meeting, Boston, MA, 2012
- University of Maryland Smith Entrepreneurship Research Conference, 2012
- Industry Studies Conference, Pittsburgh, PA, 2011
- West Coast Research Symposium on Technology Entrepreneurship, Eugene, OR, 2010

Rahul Kapoor and Patia McGrath, “Unmasking the Interplay Between Technology Evolution and R&D Collaboration: Evidence from the Global Semiconductor Industry, 1990-2010.”

- Industry Studies Conference, Pittsburgh, PA, 2011
- Symposium on Enabling Innovation Outside the Firm, Academy of Management Annual Meeting, San Antonio, TX, 2011

Rahul Kapoor and Joon Mahn Lee, “Coordinating and Competing in Ecosystems: How Organizational Forms Shape New Technology Investments.”

- Academy of Management Annual Meeting, Montréal, Canada, 2010
- Atlanta Competitive Advantage Conference, Atlanta, GA, 2010
- New York University Economics of Strategy Mini-conference, 2009

Rahul Kapoor and Ron Adner, “What Firms Make vs. What They Know: How Firms' Production and Knowledge Boundaries Affect Competitive Advantage in the Face of Technological Change.”

- Organization Science Special Issue Conference, Bergen, Norway, 2010
- BYU/University of Utah Winter Strategy Conference, Salt Lake City, UT, 2010
- Atlanta Competitive Advantage Conference, Atlanta, GA, 2009
- Academy of Management Annual Meeting, Anaheim, CA, 2008

- CCC Conference, Atlanta, GA, 2007

Ron Adner and Rahul Kapoor, “Value Creation in Innovation Ecosystems: How the Structure of Technological Interdependence Affects Firm Performance in New Technology Generations.”

- Strategic Management Society Conference, Vienna, Austria, 2006

Rahul Kapoor and Kwanghui Lim, “The Impact of Acquisitions on the Productivity of Inventors at Semiconductor Firms: A Synthesis of Knowledge-Based and Incentive-Based Perspectives.”

- Academy of Management Annual Meeting, Honolulu, HI, 2005

TEACHING

The Wharton School, University of Pennsylvania

- Technology Strategy (MGMT 731)
 - MBA Elective Course, 2009-present
 - MBA for Executives (WEMBA West) Elective Course, 2011-present
 - MBA for Executives (WEMBA East) Elective Course, 2013-present
- Management of Technology (MGMT 237), Undergraduate Elective Course, 2015-present
- Managing the Emerging Enterprise (MGMT 612), MBA Flexible Core Course, 2012-2014
 - Co-taught with Peter Cappelli and Mauro Guillén
- Competitive Strategy (MGMT 654), MBA Core Course, 2008-2011
- Wharton Business and Law Certificate, 2012-present
- Wharton Certificate of Management for Penn Law, 2013-present
- Executive Education – Boeing, Bristol-Myers Squibb, Cisco Systems, Digicel, IBM, Novo Nordisk, Sina Weibo, Twitter, Several Open-Enrollment Programs on Innovation and Strategic Management.

PROFESSIONAL ACTIVITIES

A. *Wharton Activities*

- Co-organizer of the Annual Wharton Technology and Innovation Conference, 2010-present
- Doctoral Dissertation Advisor
 - Shiva Agarwal (first placement: University of Texas at Austin)
- Member of Doctoral Dissertation Committee
 - Ramkumar Ranganathan (first placement: University of Texas at Austin)
 - Joon Mahn Lee (first placement: Purdue University)
 - Thomas Klueter (first placement: IESE, Spain)
- MBA Executive Committee, 2015, 2016
- Chair, Strategy Area Recruiting Committee, 2015
- Member of Strategy Area Recruiting Committee, 2012, 2013, 2016
- Member of Entrepreneurship Area Recruiting Committee, 2011

- Member of Strategy Area Doctoral Qualifying Exam Committee, 2009, 2011, 2013, 2015, 2016
- Member of Management Department Seminar Committee, 2009, 2012, 2013
- Co-host of the show “Innovation Navigation” on Business Radio Powered by the Wharton School on SiriusXM Channel 111, 2014-2016

B. Editorial Boards, Reviewing and Other Academic Community Activities

- Editorial Board, *Strategy Science*, 2014-present
- Editorial Board, *Organization Science*, 2013-present
- Editorial Board, *Strategic Management Journal*, 2013-present
- Editorial Board, *Academy of Management Journal*, 2010-present
- Elected Positions
 - Executive Committee, Business Policy and Strategy (BPS) Division, Academy of Management, 2013-2015
 - Representative-at-Large, Competitive Strategy Interest Group (CSIG), Strategic Management Society, 2013-2015
 - Representative-at-Large, Technology and Innovation Management (TIM) Division, Academy of Management, 2012-2014
- Nominated Positions
 - Member, Research Committee of the BPS Division, Academy of Management, 2011-2013
 - Member, Early Career Development Committee, Industry Studies Association, 2012-2014
- Discussant
 - Showcase symposium on “Collaboration in Innovation Ecosystems,” Academy of Management Annual Meeting, Anaheim, CA, 2016
 - 23rd Consortium on Competition and Cooperation (CCC), Bocconi University, 2016
 - Entrepreneurship and Innovation Research Conference Co-organized by U. of Virginia Darden School of Business and University of Cambridge Judge Business School, 2013, 2016
 - BYU/Univ. Utah Winter Strategy Conference, Park City, UT, 2015
 - 20th Consortium on Competition and Cooperation (CCC), Kansas City, 2013
 - Organization Science Special Issue Conference, Bergen, Norway, 2010
- Invited Panelist
 - TIM Junior Faculty Consortium, Academy of Management Annual Meeting, 2016
 - BPS Junior Faculty Consortium, Academy of Management Annual Meeting, 2014
 - BPS Dissertation Consortium, Academy of Management Annual Meeting, 2014
 - TIM Doctoral Consortium, Academy of Management Annual Meeting, 2012
 - Faculty Symposium at 19th CCC, University of Maryland, 2012
 - BPS Doctoral Consortium, Academy of Management Annual Meeting, 2011
- Co-organizer of Consortium on Competition and Cooperation (CCC), 2016, 2017
- Co-organizer of the Professional Development Workshop on Firms, Ecosystems and Innovation, Academy of Management Annual Meeting, 2010, 2011

- Reviewer for *Administrative Science Quarterly*, *Management Science* (Strategy, Innovation and Organizations Departments), *Research Policy*, *Strategic Entrepreneurship Journal*
- Reviewer for Academy of Management Annual Meeting, BPS and TIM divisions, various years

C. Professional Affiliations and Memberships

- Academy of Management, BPS and TIM divisions
- Strategic Management Society
- Strategy Research Forum
- Charter Member, TiE Philadelphia

OTHER AWARDS, GRANTS AND HONORS

A. Other Awards and Honors

- Outstanding Reviewer Award, Academy of Management Business Policy and Strategy (BPS) Division, 2012
- INSEAD Ph.D. Fellowship, 2004-2008
- Nanyang Technological University Natsteel Gold Medal, 1997
- Singapore Airlines-Neptune Orient Lines Undergraduate Scholarship, 1993-1997

B. Grants

- Global Initiatives Research Program and the Mack Institute for the Project “Innovation and Technological Change in the Energy Sector,” 2015
- Mack Center for the Project “Emergence of Gene Therapy Technology,” 2012
- Dean’s Research Fund for the Project “Technology Evolution and Inter-Firm Collaboration Networks,” 2011
- Global Initiatives Research Program for the Project “Firms, Ecosystems and Innovation,” 2010-2013
- Mack Center for the Project “Innovating in Ecosystems: Linking Technological Interdependencies to Firm Strategies and Innovation Outcomes,” 2009

OTHER PROFESSIONAL EXPERIENCES

UTAC (Semiconductor Manufacturer), Singapore, Manager, 1999-2004

- Part of a start-up team.
- Built and managed an organization of 12 engineers and two section managers responsible for new product development and commercialization.
- Managed strategic relationships with customers, suppliers, and external R&D labs.

B2C.com (Internet Application Provider), Singapore, Co-founder, 1999-2001

- Created and implemented a business model for developing virtual communities in Asia.
- Managed a joint venture with an IT firm.
- Formed partnerships with different community stakeholders to join the web portal.

Texas Instruments (Semiconductor Manufacturer), Singapore, Engineer, 1997-1999

- Part of a global product development team responsible for new memory chips.
- Implemented a technology transfer from a U.S.-based licensor.

PERSONAL INFORMATION

- U.S. citizen
- Married, two children born 2001 and 2007

Appendix B: Documents Considered by Rahul Kapoor

Document Title	Document Date
Legal Pleadings	
Corrected Amended Class Action Complaint for Violations of the Federal Securities Laws	Jun. 11, 2014
Lead Plaintiffs' Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.'s First Set of Interrogatories	Aug. 12, 2016
Lead Plaintiffs' Second Supplemental Objections and Responses to Defendant Advanced Micro Devices, Inc.'s First Set of Interrogatories	Nov. 28, 2016
Lead Plaintiffs' Supplemental Objections and Responses to Defendant Dr. Lisa T. Su's First Set of Interrogatories	Nov. 28, 2016
Expert Reports	
Expert Report of Chad Coffman, CFA	Nov. 18, 2016
Expert Report of Jason S. Flemmons, CPA, CFE, CFF	Nov. 18, 2016
Opening Expert Report of Professor Scott E. Thompson	Nov. 18, 2016
Depositions	
Deposition of Rick Bergman with Exhibits	Aug. 2, 2016
Deposition of Chris Cloran with Exhibits and Errata	Aug. 25, 2016
Deposition of Ruth Cotter with Exhibits	Oct. 27, 2016
Deposition of John Docherty with Exhibits and Errata	Jul. 22, 2016
Deposition of Darren Grasby with Exhibits and Errata	Jun. 22, 2016
Deposition of Emilio Ghilardi with Exhibits	Oct. 25, 2016
Deposition of Devinder Kumar with Exhibits and Errata	Jun. 30, 2016
Deposition of Michael A. Massetti with Exhibits and Errata	Jul. 1, 2016

Deposition of Derrick Robert Meyer with Exhibits	Jun. 7, 2016
Deposition of Tony Prophet with Exhibits and Errata	Aug. 12, 2016
Deposition of Rory Read with Exhibits and Errata	Jul. 29, 2016
Deposition of Thomas Seifert with Exhibits	Aug. 11, 2016
Deposition of Darla Smith with Exhibits	Oct. 28, 2016
Deposition of Lisa Su with Exhibits and Errata	Jul. 13, 2016
Deposition of Douglas Yacek with Exhibits	Oct. 20, 2016
Deposition of John Zucker with Exhibits and Errata	Jul. 19, 2016

SEC Filings

AMD, Form 10-K's for fiscal years 2009-2015

AMD, Form 10-Q's for the quarters Q1 2011 – Q4 2012

AMD, Form 8-K's from Q1 2011 to Q3 2012

AMD, Press Releases from Q4 2010 to Q4 2012

AMD, Earnings Conference Calls for the quarters Q1 2011 – Q4 2012

ARM Holdings, Form 20-F's for 2011 and 2012

ARM Holdings, Press Release on Jul. 25, 2012

Gartner, Press Releases from 2009-2014

Intel, Form 10-K's for fiscal years ended 2009-2012

Intel, Form 10-Q's for the quarters Q1 2011 – Q4 2012

Intel, Form 8-K's from Q1 2011 to Q4 2012

Intel, Press Releases from Q1 2011 to Q4 2012

Intel, Earnings Conference Calls for the quarters Q1 2011 – Q4 2012

Nvidia, Form 10-K's for years ended Jan. 29, 2012 and Jan. 27, 2013

Nvidia, Press Release on Aug. 11, 2011

Books, Academic Articles & Public Press

- Armstrong, J. Scott, "Chapter 12: Selecting Forecasting Methods," *Principles of Forecasting*, New York: Springer US 2001
- Armstrong, J. Scott, "Benchmarks for New Product Forecast Errors" Dec. 2002
- Armstrong, J. Scott, Roderick J. Brodie, and Shelby H. McIntyre, "Forecasting Methods for Marketing: Review of Empirical Research," *International Journal of Forecasting* 3, pp. 355-376 1987
- Beardsley, G. and E. Mansfield, "A Note on the Accuracy of Industrial Forecasts of the Profitability of New Products and Processes", *The Journal of Business* 51:1, pp. 127-135 Jan. 1978
- Burgelman, Robert A, "Fading memories: A process theory of strategic business exit in dynamic environments," *Administrative Science Quarterly*, 39:1, pp. 24-56 Mar. 1994
- Chafkin, Max and Ian King, "How Intel Makes a Chip: The Development of a Microprocessor is One of the Riskiest, Costliest, and Most Technically Complex Feats in Business", *Bloomberg Businessweek* Jun. 9, 2016
- Chiappetta, Marco, "AMD Athlon II X4 640: 4-Cores on the Cheap," *HotHardware* May 11, 2010
- Chopra, S. and Sodhi, M.S., "Managing Risk to Avoid Supply-Chain Breakdown," *MIT Sloan Management Review* 46:1, pp. 53-61 2004
- Christensen, Clayton M., "Hewlett-Packard: The Flight of the Kittyhawk (A)," *Harvard Business School*, 9-606-088 Oct. 23, 2006 (Revision)
- Clarke, Peter, "Wafer Prices, Allocation Up in Q1, says GSA," *EETimes* June 10, 2010
- Copeland, Wesley, "Understanding the Importance of Frame Rate," *IGN* Nov. 5, 2014
- Dalrymple, Douglas J., "Sales Forecasting Practices: Results from a United States Survey", *International Journal of Forecasting* 3, pp. 379-391 1987
- Gartner, William B. and Robert J. Thomas, "Factors Affecting New Product Forecasting Accuracy in New Firms," *Journal of Product Innovation Management* 10, pp. 35-52 1993
- Gold, Jack, "Can ARM Hold the Mobile Advantage Over Intel's x86 Architecture?" *Computerworld* Jun. 25, 2013
- Green, Kesten C. and J. Scott Armstrong, "Demand Forecasting: Evidence Based Methods," *Wharton University of Pennsylvania* Version 165 Oct. 2012
- Guerrieri, Paolo, "Think Tank 20: New Challenges for the Global Economy, New Uncertainties for the G-20," *Brookings* Jun. 2012
- Hanson, W., "The Dynamics of Cost-Plus Pricing," *Managerial and Decision* 1992

Economics 13:2, pp. 149-161

- Henderson, R.M. and K.B. Clark, "Architectural Innovation: The Reconfiguration of Existing Product Technologies and the Failure of Established Firms," *Administrative Science Quarterly* 35:1, pp.9-30 1990
- Hruska, Joel, "A Closer Look at Intel's Broadwell Delay and Defect Density Problems", *IT ProPortal* Oct. 17, 2013
- IC Insights, "Top 13 Foundries Account for 91% of Total Foundry Sales in 2013" Jan. 28, 2014
- IDC, "IDC Worldwide Client PC and PC Server Microprocessor 2Q16 Vendor Shares" Published August 2016
- Intel, "From Sand to Silicon 'Making of a Chip' Illustrations" May 2009
- Ip, Greg, "Growth Companies Feel Pressure to Book Sales" *The Wall Street Journal* Sept. 16, 1997
- Jain, Chaman L., "Benchmarking New Product Forecasting," *The Journal of Business Forecasting*, pp. 28-29 Winter 2007-08
- Kahn, Kenneth B., "An Exploratory Investigation of New Product Forecasting Practices," *The Journal of Product Innovation Management* 19, pp. 133-143 2002
- Kahn, Kenneth B., "Solving the Problems of New Product Forecasting," *Business Horizons* 57, pp. 607-615 2014
- Kapoor, Rahul and Ron Adner, "What Firms Make vs. What They Know: How Firms' Production and Knowledge Boundaries Affect Competitive Advantage in the Face of Technological Change," *Organization Science* 23:5, pp. 1227-1248 2012
- Kirsch, Nathan, "AMD Llano APU vs Intel Sandy Bridge Benchmark Results from Computex 2011," *Legit Reviews* May 31, 2011
- Knoblich, K., H. Ehm, C. Heavey, and P. Williams, "Modeling Supply Contracts in Semiconductor Supply Shains," in *Proceedings Winter Simulation Conference*, pp. 2108-2118 Dec. 2011
- Kulkarni, Manish, "Complex Instruction Set Computer (CISC)," *Auburn University* Apr. 28, 2008
- Lee, Hau L., V. Padmanabhan, and Seungjin Whang, "Information Distortion in a Supply Chain: The Bullwhip Effect," *Management Science* 43:4, pp. 546-558 Apr. 1997
- Lemon, Sumner, "AMD's Manufacturing Spinoff Renamed GlobalFoundries," *PCWorld* Mar. 3, 2009
- Lonsdale, C., "Effectively Managing Vertical Supply Relationships: A Risk Management Model for Outsourcing," *Supply Chain Management: An International Journal* 4:4, pp. 176-183 1999
- Ludvigson, S.C., "Consumer Confidence and Consumer Spending," *The Journal of* 2004

Economic Perspectives 18:2, pp. 29-50

- Lynn, Gary S., Steven P. Schnaars, and Richard B. Skov, "Survey of New Product Forecasting Practices in Industrial High Technology and Low Technology Businesses," *Industrial Marketing Management* 28, pp. 565-571 1999
- Mahajan, Vijay and Yoram Wind, "New Product Forecasting Models: Directions for Research and Implementation," *International Journal of Forecasting* 4, pp. 341-358 1988
- McCarthy, Teresa M., Donna F. Davis, Susan L. Golicic, and John T. Mentzer, "The Evolution of Sales Forecasting Management: A 20-Year Longitudinal Study of Forecasting Practices," *Journal of Forecasting* 25, pp. 303-324 2006
- Meeker, Mary, "Internet Trends @ Stanford – Bases" Dec. 3, 2012
- Mentzer, John T. and Mark A. Moon, "Chapter 2: Sales Forecasting Performance Measurement," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., online version 2005
- Mentzer, John T. and Mark A. Moon, "Chapter 3: Time Series Forecasting Techniques," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., online version 2005
- Mentzer, John T. and Mark A. Moon, "Chapter 4: Regression Analysis," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., online version 2005
- Mentzer, John T. and Mark A. Moon, "Chapter 5: Qualitative Sales Forecasting," *Sales Forecasting Management: A Demand Management Approach*, Thousand Oaks: SAGE Publications, Inc., online version 2005
- Merritt, Rick, "Analyst: Shortage May be Over for AMD Llano," *EETimes* Dec. 21, 2011
- Neale, J.J. and S.P. Willems, "Managing Inventory in Supply Chains with Nonstationary Demand," *Interfaces* 39:5, pp. 388-399 2009
- Nicol, Will, "What's an APU, and Should You Buy One for Your PC?" *Digital Trends* Jul. 10, 2015
- Obstfeld, Maurice, "IMF Survey: Uncertainty, Complex Forces Weigh on Global Growth," *International Monetary Fund* Oct. 6, 2015
- Oklobdzija, Vojin G., "Reduced Instruction Set Computers," *Technical Paper*, University of California Fall 1999
- Pinola, Melanie, "Why AMD's New Llano Processor is a Big Deal," *PC World* Apr. 6, 2011
- Scansen, Don, "Closer Look Inside AMD's Llano APU at ISSCC," *EETimes* Feb. 8, 2010
- Sakr, Sharik, "AMD Llano Desktop APU Gets Reviewed: The Best Integrated Graphics in Town," *Engadget* Jun. 30, 2011

- Shelley, Charles J. and David R. Wheeler, "New Product Forecasting Horizons and Accuracy," *Review of Business* 12:4, pp. 13-18 Spring 1991
- Souza, Crista, "... as Intel Processor Shortage Pinches OEM Earnings," *EETimes* Jan. 28, 2000
- Tang, Christopher S., Joshua D. Zimmerman, and James I. Nelson, "Managing New Product Development and Supply Chain Risks: The Boeing 787 Case," *Supply Chain Forum: An International Journal* 10:2, pp. 74-86 2009
- Terwiesch, Christian and Roger E. Bohn, "Learning and Process Improvement During Production Ramp-Up." *International Journal of Production Economics* 70, pp. 1-19 2001
- Terwiesch, Christian, Roger E. Bohn, and Kuong S. Chea, "International Product Transfer and Production Ramp-Up: A Case Study from the Data Storage Industry," *R&D Management* 31:4, pp. 435-451 2001
- Tull, Donald S., "The Relationship of Actual and Predicted Sales and Profits in New-Product Introductions," *The Journal of Business* 40:3, pp. 233-250 Jul. 1967
- Williams, John, "The Slow Recovery: It's Not Just Housing," *Federal Reserve Bank of San Francisco* Apr. 9, 2012
- Yoffie, David B., "E Ink in 2005," *Harvard Business School*, 9-705-506 Mar. 2, 2006 (Revision)

Data

Bloomberg LP

S&P Capital IQ

IDC WW Quarterly PC Tracker Data Aug. 2016

Worldwide Client PC and PC Server Microprocessor 2Q16 Vendor Shares Aug. 2016

"2010Q3-2016Q1 forecast PC.XLSX"

Analyst and Industry Reports

AMD-021-002244364 through AMD-021-002281136

Produced Documents*

* Bates numbers indicate the starting Bates number of each respective document.

AMD-002-000003131	AMD-003-000409991	AMD-008-001296211
AMD-002-000003132	AMD-003-000411152	AMD-008-001296212
AMD-002-000003414	AMD-003-000413434	AMD-008-001296213
AMD-002-000003416	AMD-003-000413436	AMD-008-001296245
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AMD-003-000288408	AMD-005-000859560	AMD-016-001914410
AMD-003-000288725	AMD-005-000859562	AMD-016-001915320
AMD-003-000288727	AMD-007-000873852	AMD-016-001915335
AMD-003-000289366	AMD-007-000874539	AMD-016-001915336
AMD-003-000304826	AMD-007-000876448	AMD-016-001915366
AMD-003-000304827	AMD-007-000876621	AMD-016-001915367
AMD-003-000312256	AMD-007-000876624	AMD-016-001917150
AMD-003-000312257	AMD-007-000876630	AMD-016-001917189

AMD-003-000313644	AMD-007-000876634	AMD-016-001919166
AMD-003-000313645	AMD-007-000888977	AMD-016-001924303
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AMD-003-000315894	AMD-007-000888980	AMD-016-001924310
AMD-003-000321506	AMD-007-000888981	AMD-016-001924311
AMD-003-000321507	AMD-007-000889500	AMD-016-001924312
AMD-003-000321507	AMD-007-000889586	AMD-016-001924313
AMD-003-000322424	AMD-007-000889587	AMD-016-001924314
AMD-003-000324003	AMD-007-000889767	AMD-016-001924315
AMD-003-000326040	AMD-007-000889768	AMD-016-001930374
AMD-003-000326042	AMD-007-000890376	AMD-016-001930592
AMD-003-000326042	AMD-007-000890380	AMD-016-001936512
AMD-003-000326908	AMD-007-000890381	AMD-016-001936513
AMD-003-000335239	AMD-007-000890404	AMD-016-001936514
AMD-003-000335240	AMD-007-000890406	AMD-016-001939718
AMD-003-000335241	AMD-007-000890407	AMD-016-001948157
AMD-003-000335242	AMD-007-000890408	AMD-016-001949290
AMD-003-000335243	AMD-007-000890451	AMD-016-001956072
AMD-003-000335244	AMD-007-000892051	AMD-016-001957324
AMD-003-000335245	AMD-007-000892180	AMD-016-001962658
AMD-003-000335277	AMD-007-000892389	AMD-016-001962664
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AMD-003-000335279	AMD-007-000892683	AMD-018-002040876
AMD-003-000335280	AMD-007-000893081	AMD-018-002040894
AMD-003-000335281	AMD-007-000893361	AMD-018-002040895
AMD-003-000335282	AMD-007-000893362	AMD-019-002053011
AMD-003-000335283	AMD-007-000894722	AMD-019-002053396
AMD-003-000335284	AMD-007-000894725	AMD-019-002053399
AMD-003-000335285	AMD-007-000894726	AMD-019-002053400
AMD-003-000335286	AMD-007-000894727	AMD-019-002053415
AMD-003-000335468	AMD-007-000895252	AMD-019-002053417
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AMD-003-000350379	AMD-007-000895256	AMD-019-002053419
AMD-003-000355016	AMD-007-000895257	AMD-019-002053420
AMD-003-000355017	AMD-007-000895297	AMD-019-002053421
AMD-003-000355737	AMD-007-000895299	AMD-019-002053422
AMD-003-000355738	AMD-007-000895302	AMD-019-002053424
AMD-003-000355739	AMD-007-000895303	AMD-019-002053425
AMD-003-000355740	AMD-007-000895304	AMD-019-002053426
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AMD-003-000355745	AMD-007-000895325	AMD-019-002053428
AMD-003-000355746	AMD-007-000895326	AMD-019-002053832
AMD-003-000355747	AMD-007-000895327	AMD-019-002054430

AMD-003-000355748	AMD-007-000895341	AMD-020-002072982
AMD-003-000355749	AMD-007-000895344	AMD-020-002072983
AMD-003-000355750	AMD-007-000895345	AMD-020-002073002
AMD-003-000357385	AMD-007-000895346	AMD-020-002073306
AMD-003-000358427	AMD-007-000895351	AMD-020-002073307
AMD-003-000358429	AMD-007-000895354	AMD-020-002073326
AMD-003-000367891	AMD-007-000895355	AMD-020-002080713
AMD-003-000367892	AMD-007-000895356	AMD-020-002081474
AMD-003-000371170	AMD-007-000895357	AMD-020-002081490
AMD-003-000375106	AMD-007-000895361	AMD-020-002086584
AMD-003-000376516	AMD-007-000895362	AMD-020-002094133
AMD-003-000376684	AMD-007-000895427	AMD-020-002094477
AMD-003-000376780	AMD-007-000895431	AMD-020-002094479
AMD-003-000377536	AMD-007-000895432	AMD-020-002097951
AMD-003-000377763	AMD-007-000895433	AMD-020-002097953
AMD-003-000379595	AMD-007-000895454	AMD-020-002100619
AMD-003-000380342	AMD-007-000895457	AMD-020-002104623
AMD-003-000384721	AMD-007-000895458	AMD-020-002104987
AMD-003-000386469	AMD-007-000895459	AMD-020-002104987
AMD-003-000386470	AMD-007-000895460	AMD-020-002106040
AMD-003-000387590	AMD-007-000895490	AMD-020-002106040
AMD-003-000387868	AMD-007-000895494	AMD-020-002112196
AMD-003-000388008	AMD-007-000895495	AMD-020-002112197
AMD-003-000388456	AMD-007-000895496	AMD-020-002112198
AMD-003-000388457	AMD-007-000895499	AMD-020-002112199
AMD-003-000389585	AMD-007-000895500	AMD-020-002112957
AMD-003-000389606	AMD-007-000895501	AMD-020-002112959
AMD-003-000389607	AMD-007-000895502	AMD-020-002112959
AMD-003-000389609	AMD-007-000895528	AMD-020-002114493
AMD-003-000391288	AMD-007-000895530	AMD-020-002114494
AMD-003-000391747	AMD-007-000895533	AMD-020-002114541
AMD-003-000392190	AMD-007-000895534	AMD-020-002136641
AMD-003-000392192	AMD-007-000895535	AMD-020-002136641
AMD-003-000394361	AMD-007-000895539	AMD-020-002136962
AMD-003-000394491	AMD-007-000895542	AMD-020-002152669
AMD-003-000394615	AMD-007-000895543	AMD-020-002152670
AMD-003-000397068	AMD-007-000895544	AMD-020-002152671
AMD-003-000397069	AMD-007-000895545	AMD-020-002152672
AMD-003-000398905	AMD-007-000895548	AMD-020-002152673
AMD-003-000398906	AMD-007-000895549	AMD-020-002152674
AMD-003-000399252	AMD-007-000895550	AMD-020-002152675
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AMD-003-000399254	AMD-007-000895565	AMD-020-002152677

AMD-003-000400202	AMD-007-000895566	AMD-020-002152678
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AMD-003-000400361	AMD-008-001112946	AMD-020-002152706
AMD-003-000400363	AMD-008-001114573	AMD-020-002152707
AMD-003-000400366	AMD-008-001116776	AMD-020-002179481
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AMD-003-000400407	AMD-008-001168909	AMD-020-002181153
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AMD-003-000405715	AMD-008-001173772	AMD-020-002191560
AMD-003-000405804	AMD-008-001173772	AMD-020-002191561
AMD-003-000405807	AMD-008-001174255	AMD-020-002191561
AMD-003-000405809	AMD-008-001174258	AMD-020-002192893
AMD-003-000406560	AMD-008-001174258	AMD-020-002192893
AMD-003-000406973	AMD-008-001208183	AMD-020-002192895
AMD-003-000406975	AMD-008-001208185	AMD-020-002192895
AMD-003-000406976	AMD-008-001208186	AMD-020-002192895
AMD-003-000407040	AMD-008-001219070	AMD-020-002192896
AMD-003-000407042	AMD-008-001225579	AMD-020-002192896
AMD-003-000407042	AMD-008-001225581	AMD-020-002192897
AMD-003-000408379	AMD-008-001225581	AMD-020-002192897
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AMD-003-000409746	AMD-008-001292320	AMD-020-002198699
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AMD-003-000409934	AMD-008-001295011	AMD-020-002205338
AMD-003-000409940	AMD-008-001296176	AMD-021-002284380
AMD-003-000409942	AMD-008-001296179	AMD-021-002318352
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AMD-003-000409953	AMD-008-001296181	AMD-022-002320818
AMD-003-000409972	AMD-008-001296182	AMD-023-002323351
AMD-003-000409974	AMD-008-001296185	AMD-025-002323356
AMD-003-000409981	AMD-008-001296186	AMD-025-002323357
AMD-003-000409983	AMD-008-001296187	EY-AMD-EF-000005
AMD-003-000409984	AMD-008-001296208	EY-AMD-EF-000070
AMD-003-000409985		
AMD-003-000409986		
AMD-003-000409990		

Any other documents specifically cited in the report, but not listed in this appendix.

I. Appendix C: Differences between Intel and AMD, and Performance in 2011 and 2012

1. Figure C1 illustrates Intel's dominance in the overall PC microprocessor market, which aided its ability to weather the downturn in demand during the alleged Class Period.

Figure C1
Intel and AMD Market Share in the PC Microprocessor Market
Q1 2010 – Q4 2015



2. Figure C2 and Figure C3 show that Intel's share of the desktop and mobile markets, respectively, increased in Q2 2012 and Q3 2012. Total demand for desktop PCs declined in these quarters, so AMD's sales were doubly affected.

Figure C2
Intel and AMD Market Shares in Desktop PC Microprocessors
Q1 2009 – Q4 2015



Figure C3
Intel and AMD Market Shares in Mobile PC Microprocessors
Q1 2009 – Q4 2015



3. In the following sections, I discuss the reasons for Intel's relative resilience as compared to AMD.

A. INTEL'S BRAND WAS STRONGER THAN AMD'S BRAND

4. Intel had a stronger brand than that of AMD, resulting in Intel's ability to maintain or gain market share, even when it sold products at similar price points. For example, AMD indicated at the beginning of Q2 2012 that certain Latin American distributors refused to purchase Brazos products due to the "brand value" and "[e]ase of sale" of Intel's products.¹ Similarly, when Intel lowered product prices to match and undercut AMD's prices in Q2 2012,

¹ Email from John Byrne to Bradley Turner, BJ Furse, Chris Cloran, Jack Huynh, Chris Goelkel, and Brooks Byrd, April 30, 2012 [AMD-003-000096433] ("E300/E1 in LA: we are currently at price parity with both bins of Celeron. However – LA is refusing Brazos due to the 'brand value' and 'Ease of sale' of dual core Intel which is their Celeron brand substitute.").

AMD indicated that even at the same price level, Intel would get most of the sales volume “due to its brand and market penetration.”²

5. Intel’s Sandy Bridge, released in December 2010,³ was Llano’s primary competitor. Reviews of Llano in comparison to Sandy Bridge were mixed; some promoted Sandy Bridge on the basis of higher performance, while others preferred Llano’s competitive pricing and superior graphics.⁴ Llano had a particular advantage for gaming purposes; its frame rate (the number of image frames that can be displayed in a given amount of time)⁵ was twice as high as that of Sandy Bridge for some of the most popular video games,⁶ while at the same time it was less expensive than Sandy Bridge.⁷

B. AMD’S EXPOSURE TO THE CONSUMER MARKET WAS GREATER THAN INTEL’S

6. Intel dominated the mid to high-end of the PC market,⁸ while AMD provided a “low cost alternative.”⁹ Figure C4 shows that Intel’s microprocessors sold at a much higher average price than AMD’s.

² Email from Ronaldo Miranda to Darren Grasby, BJ Furse, Raj Chopra, Jack Huynh, and Chris Cloran, copying John Byrne, and Mark W Jones, May 18, 2012 [AMD-003-000285907] (“We all know that at the same price Intel will take most of the volume due to its brand and market penetration.”).

³ Intel, 2010 Form 10-K, February 18, 2011.

⁴ Kirsch, Nathan, “AMD Llano APU vs Intel Sandy Bridge Benchmark Results From Computex 2011,” *Legit Reviews*, May 31, 2011. For a description of PCMark Vantage, see “PC Mark Vantage,” Futuremark, [https://www.futuremark.com/benchmarks/pcmark-vantage]; Sakr, Sharik, “AMD Llano desktop APU gets reviewed: the best integrated graphics in town,” *Engadget*, June 30, 2011.

⁵ Copeland, Wesley, “Understanding the Importance of Frame Rate,” *IGN*, November 5, 2014.

⁶ One tech blog found that all of its benchmarking games could be played using a Llano chip. Sakr, Sharik, “AMD Llano desktop APU gets reviewed: the best integrated graphics in town,” *Engadget*, June 30, 2011.

⁷ Sakr, Sharik, “AMD Llano desktop APU gets reviewed: the best integrated graphics in town,” *Engadget*, June 30, 2011.

⁸ “Highlights from Analyst Day,” *Deutsche Bank*, February 2, 2012 [AMD-021-002254382], p. 2 (“The inflection points in the industry poses risks for AMD as well, and the company will try to avoid becoming stuck in the middle between new, low priced ARM vendors and Intel which dominates the high-end of market and enjoys a significant manufacturing advantage.”).

⁹ “Advanced Micro Devices to Buy,” *Morningstar*, March 1, 2012 [AMD-021-002263286], p. 1 (“The PC processor industry has long been dominated by Intel, the world’s largest semiconductor company. As the underdog, AMD historically manages to maintain a minor share in the market by providing a low-cost alternative to Intel’s higher-performance chips.”).

Figure C4
Intel and AMD Average Selling Price of Microprocessors
Q1 2010 – Q4 2015



7. During the alleged Class Period, analysts discussed in particular Intel's advantage in the corporate PC market and AMD's advantage in the consumer market.¹⁰ Similarly, Gartner, an industry research firm, indicated that AMD had notebook dominance in the lower-end consumer, home-office, and small-business markets,¹¹ while Intel had the overall advantage in

¹⁰ "Upgrading to Outperform as APU Advantages Become Clear," *Raymond James*, July 22, 2011 [AMD-021-002270626], p. 1 ("Unlike Intel's Sandy Bridge which integrates graphics into the processor, AMD's APU variants called Brazos and Llano basically integrate the processor into the graphics or GPU. In enterprise PC or server centric workloads, Intel has the advantage. But in certain segments of the consumer PC space, AMD has the advantage; and we believe this is a sustainable dynamic.").

¹¹ "Notebook PCs: Technology Overview," *Gartner*, March 29, 2011 [AMD-016-001885488], p. 6 ("Although AMD processors are gaining some traction in corporate notebooks, its largest mobile presence is in the consumer, home-office and small business markets...").

the higher-end corporate market.¹² Figure C5 demonstrates this price differentiation in notebook market position between the two firms.

Figure C5
Distribution of Notebook Prices Containing AMD and Intel Chips
2011 and 2012



8. Consistent with its market position, AMD targeted Brazos¹³ and Llano¹⁴ for low to mid-end PC price points. AMD's APUs also had stronger graphics capabilities than Intel's offerings,¹⁵

¹² "Notebook PCs: Technology Overview", *Gartner*, March 29, 2011 [AMD-016-001885488], p. 6 ("Most notebooks aimed at the corporate market are based on Intel processors.").

¹³ "Broadly inline 1Q and 2Q11 Guide," *Barclays Capital*, April 25, 2011 [AMD-021-002246706], p. 3 ("While Intel saw ASPs up close to 10% in 1Q AMD was not able to benefit from the same up-sell opportunity as its brazos platform mainly targets the lower end of the PC market and netbooks.").

¹⁴ "AMD: ASPs and Mix Explain the Difference between AMD and INTC," *Gleacher & Company*, April 25, 2011 [AMD-021-002257072], p. 1 ("With Llano ramp in progress we expect some improvements in mix, but still see Llano targeted at lower price points than Sandy Bridge."); "AMD: Valuation Requires Disruptive Product Cycle – Not Likely," *Raymond James*, April 25, 2011 [AMD-021-002270517], p. 2 ("We suspect, based on history, that ceding a couple of quarters to Intel in the market comes at the expense of

resulting in greater consumer rather than corporate consumption.¹⁶ Around the time of the alleged Class Period, AMD derived approximately 75 percent of its revenue from the consumer PC market, which was “highly correlated with macroeconomic conditions.”¹⁷

9. AMD’s advantage in the consumer PC sector became a disadvantage when consumer spending declined in 2012. Intel, on the other hand, was able to withstand much of the economic downturn due to its stronger position in the market for large businesses. In Q4 2011, analysts noted that while both consumer and corporate demand were both declining, “[c]orporate demand remain[ed] stronger than consumer.”¹⁸ Figure C6 shows that when demand decreased significantly starting in Q2 2012, it dropped more dramatically for consumers, small- and medium-size businesses than for large and very large businesses. AMD’s internal documents in Q2 2012 corroborate this finding, noting that the consumer market was one of the weakest computing segments.¹⁹

ASPs; however, we do believe Llano will fill in the void in the mid-tier of the processor market and allow AMD to continue to enjoy its 18-20% overall market share unit-wise.”).

¹⁵ “Notebook PCs: Technology Overview,” *Gartner*, March 29, 2011 [AMD-016-001885488], p. 11 (“Going forward, AMD is moving to what it refers to as Accelerated Processing Units (APUs), which combine a graphics processor with the CPU. While this architecture is similar to Intel’s current second-generation Core processor design, the implementations are somewhat different, and benefit from the strong graphics capabilities that AMD inherited from the purchase of ATI in 2006.”).

¹⁶ AMD, Q1 2011 Earnings Conference Call (Rick Bergman), April 21, 2011, p. 6 (“[W]e have much greater success in the consumer market...”)

¹⁷ “With or Without Fabs, Unfortunately AMD is Still AMD,” *J.P. Morgan*, October 19, 2012 [AMD-021-002259992], p. 5 (“AMD derives roughly 75% of its revenue from the consumer PC end market, which is highly correlated with macroeconomic conditions.”).

¹⁸ “Semi Field Notes: Asia Motherboard Update,” *Longbow Research*, December 15, 2011 [AMD-021-002260964], p. 2 (“Corporate demand remains stronger than consumer, but it too is weakening.”).

¹⁹ “Q2 Overview,” AMD, [AMD-003-000482084 (attach)], p. 2 (“Q2 Market Weakness. Overall market down QoQ mid-to-low single digits. Combined with AMD’s high exposure to weakest segments (consumer client) and regions (N. Amer, Europe.”); CEO/CFO Report to Board of Directors, AMD, July 2012 [AMD-004-000547113], p. 2 (“We are seeing a significant reduction in the Computing business quarter to quarter and year over year with the Consumer segment feeling the most impact.”).

Figure C6
Year-Over-Year Change in PC Shipments by Customer Type
Q2 2011 –Q4 2012



10. Similarly, in Q3 2012, an analyst noted:

Intel appears to be holding up better than AMD in the current uncertain macroeconomic environment, which we attribute to Intel's greater exposure to the server processor market segment and to enterprises, which are areas that seem to be healthier.²⁰

11. AMD's niche in the lower-end consumer market also appears to have resulted in increased cannibalization from tablets than Intel may have experienced in the enterprise and higher-end consumer markets.²¹

²⁰ "AMD is being hampered by a near-term slowdown in global PC demand," *Morningstar*, July 20, 2012 [AMD-021-002263347], p. 5.

²¹ "Q3 warning anticipated, still underscores challenges," *Bank of America Merrill Lynch*, October 11, 2012 [AMD-021-002250408], p. 1 ("AMD's preliminary sales and margin miss in 3Q is reflective of a weak macro/PC market, but also of company specific issues including: 1) Share losses against Intel's aggressive pricing with end-of-life 32nm Sandy Bridge parts...5) High exposure to low-end consumer PCs has left it vulnerable to \$400 tablets, 6) Fab underutilization charges at supplier, GlobalFoundries which is pressuring gross margins, 7) Emerging market PC channel execution issues which will take time to turnaround."). *See also*, "3Q Neg Pre: Weaker PC Demand or Weaker PC Demand and Continued Share Loss?," *Credit Suisse*, October 11, 2012 [AMD-021-002253039], p. 2 ("Regarding 2013 we lower our rev/EPS estimates...as we believe INTC has a clear advantage in the high-end (as well as low-end) of the PC market, and the ARM camp will likely gain share at the expense of AMD at the lower-end of the stack (whether it be via tablet cannibalization or low-end PCs.).").

C. AMD'S EXPOSURE IN CHINA WAS GREATER THAN INTEL'S

12. Weakening sales in China beginning in Q2 2012 resulted in declining results for both Intel and AMD. However, AMD's exposure in this region was greater than that of Intel, leading to a greater negative impact for AMD. As shown in Figure C7, Intel earned 31 percent of its revenues in Greater China (China, Taiwan, and Hong Kong) in 2011 and 2012. By contrast, 55 percent of AMD's revenues in 2011 and 2012 were from sales in Greater China.

Figure C7
AMD and Intel Sales Revenue by Region
2011 – 2012
(\$ in millions)

Regions	AMD		Intel	
	2011-2012 Revenue	% of Total	2011-2012 Revenue	% of Total
Singapore	\$1,912	16%	\$26,248	24%
United States	\$863	7%	\$17,353	16%
Greater China	\$6,624	55%	\$33,293	31%
Japan	\$750	6%	\$8,841	8%
Other Countries	\$1,841	15%	\$21,605	20%
Total	\$11,990	100%	\$107,340	100%

Source: AMD, 2012 Form 10-K, February 21, 2013; Intel, 2012 Form 10-K, February 19, 2013.

D. INTEL'S DIVERSIFICATION IN PRODUCTS FOR NON-PC MARKETS

13. Intel did not face the same economic impacts in 2012 as AMD for the additional reason that Intel pursued a strategy to sell products for tablets, smartphones, and other small devices. In early 2011, analysts indicated that AMD “[did] not plan to target the smartphone segment due to the significant competition”²² and that AMD did not “appear to be well-positioned for the next

²² “Tech Conference Day 2: Tablets, SSDs, 4G, and LBO panel focus,” *Goldman Sachs*, February 17, 2011 [AMD-021-002257718], p. 1.

battleground, which is coming really fast.”²³ Intel, however, in Q3 2011, began to design and manufacture products for tablets, phones, and other mobile devices,²⁴ providing a buffer against the industry changes that followed. While AMD also unveiled a chip designed specifically for tablets in the Q3 2011, analysts indicated that other manufacturers’ chips overshadowed AMD’s technology and did not expect AMD to make a “big splash” in the tablet market.²⁵ AMD was not successful in penetrating the tablet market during 2011-2012.²⁶

14. In addition, Intel increased manufacturing of 22-nanometer products used for ultrabooks and smartphones in Q1 2012, a time when AMD was not yet manufacturing products at nodes smaller than 32-nanometers.²⁷ According to Intel, smartphones with Intel chips received

²³ Email from Lyndsey Rojas to Chris Cloran, and Leslie Sobon, copying Andrew Fox and Phil Hughes, April 12, 2011 [AMD-003-000078817], (“I don’t think Brazos will fit into something like an iPad 2.0... you don’t appear to be well-positioned for the net battleground, which is coming really fast.”).

²⁴ Intel, Q3 2011 Earnings Conference Call, October 18, 2011, pp. 2-6 (“Work on Medfield based smartphone and tablet design continues, and we remain on track for Medfield based devices to launch in the first half of next year...Intel has tailored Atom for low-end PCs, is now tailoring it for tablets. We’re tailoring different version of it for handsets and cell phones and other versions for embedded and automotive implementations. And the ARM guys have done a lot of that in the past with different derivatives of their products.”).

²⁵ “In-Line Quarter, Steep Llano Ramp Drives Solid September Guide,” *Barclays Capital*, July 22, 2011 [AMD-021-002247171], p. 4 (“AMD formally unveiled its Z series chip optimized for the Tablet market codenamed ‘Desna’ at Computex. At just 6W of power we recognize the improved battery life but note that competitor chips such as Apple’s A5, TI’s OMAP 4, NVIDIA’s Tegra 2 and Intel’s Atom chip all have power envelopes [sic] significantly below that of AMD and therefore don’t see AMD making a big splash here just yet.”).

²⁶ AMD’s sales of Z-Series APUs, its semiconductor series for tablets, made up only \$3.0 million of AMD’s total sales of \$6,244 million (less than one percent) in 2011-2012. Figure 6 in this report. *See also*, AMD, 2012 Form 10-K, February 21, 2013, p. 5 (“Our APUs for mobile PC platforms consist of our performance, mainstream AMD A-Series APU, the AMD E-Series APU for everyday performance, the AMD C-Series APU for HD internet experiences in small form factors, and the AMD Z-Series APU for Windows-based tablets.”).

²⁷ Intel, Q1 2012 Earnings Conference Call, April 17, 2012, p. 2 (“We are ramping our 22-nanometer manufacturing process into high volume. This revolutionary technology used our third-generation high-k metal gate and the industry’s first 3-D tri-gate transistors. The move to tri-gate transistors delivers roughly twice the improvement in transistor performance over conventional planar scaling when applied to low-power applications like smartphones and ultrabooks.”).

positive consumer reviews.²⁸ Shortly after, in Q3 2012, ultrabooks and tablets with Intel products began to enter the market.²⁹ When the PC market began to decline in 2012, Gartner indicated that the decline would impact both AMD and Intel, but that Intel had a “leg-up” on AMD in terms of mobile devices and thin clients.³⁰

15. In addition to diversifying into the mobile, tablet, and small devices sector, Intel also had a larger proportion of its business related to non-PC products. As described above, Intel’s PC Client Group, which offered products incorporated in notebook and desktop computers,³¹ made up 66 and 64 percent of Intel’s revenues in 2011 and 2012, respectively.³² However, AMD’s rough equivalent, the Computing Solutions segment (which produced microprocessors and related products for PCs) represented 76 and 74 percent of AMD’s revenues in 2011 and 2012, respectively.³³ These percentages indicate that Intel had greater diversification in products targeted for non-PC markets, such as phone components and McAfee security software, which left Intel with less exposure to the decline in the PC market.³⁴

²⁸ Intel, Q2 2012 Earnings Conference Call, July 17, 2012, p. 2 (“In the smartphone space, we saw the launch of Medfield-based phones from Lenovo, Lava, and Orange to great reviews. These launches further established Intel in the market, building on the wide presence we have in baseband.”).

²⁹ Intel, Q3 2012 Earnings Conference Call, October 16, 2012, p. 3 (“In the client space, we are seeing innovative products coming to the market with Intel inside, ranging from ultrabooks to smartphones to tablets.”).

³⁰ Email from Lyndsey Rojas to Chris Cloran and, Leslie Sobon, copying Andrew Fox and Phil Hughes, April 12, 2011 [AMD-003-000078817], (“If PCs become less relevant over the next few years, and focus is on mobile devices and thin clients – it will hurt both you and Intel, but they do have a leg-up on you now.”).

³¹ Intel, 2012 Form 10-K, February 19, 2013, p. 5.

³² Intel, 2012 Form 10-K, February 19, 2013, p. 7.

³³ AMD, 2012 Annual Report on Form 10-K, February 21, 2013, p. 48.

³⁴ Intel, 2011 Form 10-K, February 23, 2012, p. 4.

Exhibit 62

FINAL TRANSCRIPT

Thomson StreetEventsSM

AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Event Date/Time: Apr. 21. 2011 / 9:00PM GMT

Seifert
EXHIBIT NO. 342
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FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

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Advanced Micro Devices - IR

Thomas Seifert

Advanced Micro Devices - Interim CEO, SVP, CFO

Rick Bergman

Advanced Micro Devices - SVP, General Manager Product Group

CONFERENCE CALL PARTICIPANTS

JoAnne Feeney

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Glen Yeung

Citigroup - Analyst

John Pitzer

Credit Suisse - Analyst

Tim Luke

Barclays Capital - Analyst

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David Wong

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Jim Covello

Goldman Sachs - Analyst

Ross Seymore

Deutsche Bank - Analyst

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PRESENTATION

Operator



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Good afternoon. My name is Hughey, and I will be your conference operator for today. At this time, I would like to welcome everyone to AMD's first-quarter 2011 earnings conference call. (Operator Instructions). As a reminder, this conference is being recorded today. I would now like to turn the conference over to Ms. Ruth Cotter, Vice President of Investor Relations for AMD. Please go ahead.

Ruth Cotter - *Advanced Micro Devices - IR*

Thank you, Hughey, and welcome to AMD's first-quarter earnings conference call. Participants on today's conference call are Thomas Seifert, our Chief Financial Officer and Interim CEO, and Rick Bergman, Senior Vice President and General Manager of AMD's Product Group.

This is a live call and will be replayed via webcast on AMD.com. There will also be a telephone replay. The number is 888-266-2081. Outside of the United States, the number is 703-925-2533. The access code for both is 1522169. The telephone replay will be available for the next 10 days, starting later this evening.

This is the first quarter AMD is accounting for GLOBALFOUNDRIES under the cost method, and AMD's ownership of GLOBALFOUNDRIES on a fully diluted basis decreased to approximately 12% as of the end of the first quarter. Reconciliation for all non-GAAP financial measures discussed today is included in the financial tables accompanying our earnings release, available in the investor relations section of AMD.com. Written executive commentary, which contains additional information regarding AMD's results, is posted on AMD's website at quarterlyearnings.AMD.com.

I would also like to highlight a few dates of interest for you. Thomas will present at the JPMorgan Global Technology, Media, and Telecom conference on May 17 in Boston. Our second-quarter quiet time will begin at the close of business on Friday, June 17, and we will announce our second-quarter earnings on Thursday, July 21.

Before we begin today's call, I'd like to caution everyone that we will be making forward-looking statements about management's expectations. Investors are cautioned that those statements are based on current beliefs, assumptions, and expectations, speak only as of the current date, and involve risks and uncertainties that could cause actual results to differ materially from our current expectations. The semiconductor industry is generally volatile, and market conditions are particularly difficult to forecast, especially in light of the current state of the economy.

We encourage you to review our filings with the SEC where we discuss the risk factors that could cause actual results to differ materially from expectations. You'll find detailed discussions about such risk factors in our most recent SEC filing, AMD's annual report on Form 10-K for the quarter ended December 25, 2010.

With that, I'd like to hand the call over to Thomas.

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

Thank you, Ruth.

AMD's performance in the first quarter of 2011 was solid. We launched the first of our revolutionary AMD Fusion APU platforms based on our low-power process processors, and we are pleased to report excellent OEM adoption and sellthrough to end users.

In the first full quarter of availability, roughly half of our notebook shipments were based on Brazos, a product rapidly gaining credit for redefining the user experience in both the netbook and thin and light notebook segment.

We also began shipping Llano for revenue in the first quarter, and it is very simply the most impressive processor in history. Featuring a modern graphics architecture, Llano gives mainstream PC users something they've never had before -- a brilliant



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

visual experience, coupled with all-day battery life. It delivers a better end-user experience than anything else on the market, and our customers have told us that. You should expect to see Llano-based systems widely available in this quarter.

Beyond its unique performance characteristics, Fusion is also a key part of our overall profitability strategy. We delivered on our topline guidance, we were right on target with our non-GAAP gross margin guidance at 45%, and we managed operating expenses carefully. As a result, we delivered solid free cash flow in the period.

In the commercial market, improving performance in our embedded and professional graphics segments was masked by continued softness in our overall server business. While disappointed with our topline trajectory in the server business, we've taken a number of steps that we believe should lead to improved results in the second half of the year. First, we've on-boarded a larger team of experienced customer account engineers who are now engaged with customers.

In addition, we are working more closely with our OEMs and ODMs to drive the new AMD-based systems into the hands of key cloud virtualization customers. And finally, we continue on track to ship Bulldozer-based server platforms toward the end of the summer. Our new Bulldozer core delivers substantial improvements in floating-point performance and a platform featuring superior memory utilization and I/O throughput.

In graphics, we continue to advance our leadership in a number of important ways. First, we launched the HD 6990, truly the world's fastest graphics cards. Second, we set an all-time record for mobile discrete revenue. And third, we are now the exclusive provider of discrete graphics solutions for Apple's iMac and MacBook Pro platforms. In short, we believe that we continued to gain market share in the mobile GPUs in the quarter.

Our continued leadership in discrete graphics and our exciting new Fusion APUs prove the world's best PCs have AMD radio and graphics on board.

Turning to our first-quarter financial summary. First-quarter revenue was \$1.61 billion, a 2% sequential decline and within the guided range for the quarter. Non-GAAP net income was \$56 million, or 8 percent -- \$0.08 per share, calculated using 740 million fully diluted shares. Among other adjustments, it excludes a non-cash gain of \$492 million related to the dilution of our equity interest in GLOBALFOUNDRIES.

Non-GAAP operating income was \$92 million. Non-GAAP gross margin was 45% and flat quarter over quarter. Lower than anticipated 32 nm manufacturing costs and the ramp of margin-accretive APUs offset the negative impact of seasonally-lower game console revenues, lower ASPs, and a weaker product mix in legacy microprocessor products.

Operating expenses for the quarter came in below the guided range of approximately \$650 million, due to tight expense management. R&D was \$360 million and SG&A was \$261 million. Adjusted EBITDA was \$198 million, down \$43 million from the prior quarter.

Now switching to the business segments, computing solutions segment revenue was \$1.2 billion, down 2% compared to the fourth quarter of 2010. We are excited about our APU platforms, which are gaining traction in the market. We tripled unit shipments over the prior quarter.

In addition, we started shipping Llano, our high-end APU, late in the first quarter.

Computing solutions' operating income was \$100 million, up \$9 million from the previous quarter, primarily due to improved gross margins from a higher mix of APU sales compared to the prior quarter.

Graphics segment revenue was \$413 million, down 3% compared to the fourth quarter of 2010, primarily due to the seasonally-driven decline in game console revenue. Graphics segment operating income was \$19 million, down \$49 million from the fourth quarter of 2010, primarily due to seasonally-lower game console revenue.



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Turning to the balance sheet, our cash, cash equivalents, and marketable securities' balance at the end of the quarter was \$1.75 billion. Accounts Receivable at the end of the quarter was \$797 million, down \$171 million, primarily due to the timing of sales during the quarter. Inventory was \$648 million exiting the quarter and long-term debt as of the end of the quarter was \$2.2 billion.

Non-GAAP adjusted free cash flow was \$154 million, up \$143 million from the fourth quarter of 2010 due to higher non-GAAP net cash provided by operating activities.

Turning to the outlook, the following statements concerning AMD are forward-looking, and actual results could differ materially from current expectations. For the second quarter of 2011, AMD expects second-quarter revenue to be flat to slightly down sequentially. Operating expenses are expected to be \$620 million.

As mentioned in the last call, our priorities remain clear. I said we would stay the course of execution, and we continue to do so, bolstering our discrete graphics leadership; tripling unit shipments of our first APU, Brazos; and shipping Llano for revenue in the quarter. I said we would increase our pace, and in addition to meeting or exceeding all of our major engineering commitments, we have launched a number of key cross-functional initiatives designed to improve productivity and scalability, optimize our go-to-market activities, improve R&D productivity, and generate greater supply-chain efficiencies.

To close, we know we have the best IP portfolio in the processor business, and with our new Fusion APUs and Bulldozer on the way, we have our strongest product portfolio in the Company's history and we have a business model tuned for agility and profitability. I would like to thank our employees for their continued dedication, creativity, and commitment to delivering on our commitments.

Before we turn it back to Ruth for the Q&A, I would like to make a brief comment on the state of the CEO search at AMD. The Board is very happy with the interest we have received, and is actively interviewing candidates. We are pleased with our progress to date. Ruth?

Ruth Cotter - *Advanced Micro Devices - IR*

Hughey, we'd be very happy for you to poll the audience for questions now, please.

QUESTIONS AND ANSWERS

Operator

(Operator Instructions). JoAnne Feeney, Longbow Research.

JoAnne Feeney - *Longbow Research - Analyst*

Congrats on a nice solid quarter. I have a question about your interpretation of the aggregate situation in light of the results of your competitor. Did it cause you to change your assessment of sort of the global PC environment? Did their results sort of match your views? Is this purely a timing issue between you and Intel, or perhaps you could give us a sense of your visibility to the second half, given what we are hearing regarding the global PC situation.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

Very good questions. I think I said in the last couple of calls that our expectation was around 11% for PC growth for this year, and to be very honest, at this point in time we don't see a reason to deviate very much from that opinion. And actually, data is moving more towards the few we had on the market for some time now. You can discuss whether it's now 10.5% or 10.7% or 11%, but we don't see any reason to deviate from that expectation for this year.

JoAnne Feeney - *Longbow Research - Analyst*

Then, perhaps as a follow-up, on Llano, where we understand the volume is coming in the third quarter, one question that comes up a lot is how compelling to the consumer will your advantage in graphics be? I'm just wondering if you could fill us in on your efforts with the OEMs and other resellers to help them understand the difference in graphics and whether they're able to translate that to customers, in your view.

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

Rick, do you want to take that question?

Rick Bergman - *Advanced Micro Devices - SVP, General Manager Product Group*

Sure. Just to be clear, the volume is actually coming in Q2. So, that certainly when we expect to ramp to production and have platforms launch on Llano.

I think the best answer to your question is the success we've seen with our Brazos platform. It was just fantastic success in Q1, and our OEMs are now really on board with bringing a better, more compelling, higher performance solution with Llano, and to a certain degree, we hear the reception around that great visual graphics video experience even from our competitor and how important that is in the marketplace, so we think we're right on target with our value proposition.

JoAnne Feeney - *Longbow Research - Analyst*

Great, thanks. And maybe you could elaborate on Brazos. Where are you seeing the greatest success? Is it Tier 1 players? Is it white box? Is it most mostly notebook? Are there some desktop activities?

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

To be very honest, what excites us the most is that we see the success across the board. We have seen very strong OEM adoption across the whole customer portfolio. We have seen great traction in the embedded segment and also now in emerging markets in the white books arena.

Operator

Glen Yeung, Citi.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Glen Yeung - Citigroup - Analyst

Thomas, I think I heard you say that half of your notebook shipments in the quarter were Brazos. So I guess the first point is, is that accurate? But if it is, then when we think about second quarter, what proportion of your notebook sales do you think will be a combination of Brazos and Llano, and what are the implications of that for gross margin and ASPs?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Very good question. So, you heard right. 50% was the share we had in the first quarter.

I think the implication for gross margin in the second quarter are that the gross margin is going to be up quarter over quarter. And we will see a balanced impact on ASP performance because, as you know, while highly margin accretive, Brazos should set a lower price point, and we have to see how the mix is going to balance itself out. Flat is today a very good assumption, but with gross margins moving upwards.

Glen Yeung - Citigroup - Analyst

Interesting. That's great. And then, I wanted to ask another question, which is you sort of talked about some progress you're making -- or some growth you saw, sorry, in emerging markets. I wonder if you could address what you're seeing in the corporate market, just from an industry perspective, and then perhaps more importantly, how do you feel AMD is doing in the corporate market and whether or not these new products, do you think, will help your chances?

Rick Bergman - Advanced Micro Devices - SVP, General Manager Product Group

Certainly, [Hans]. This is Rick again. Obviously, we have much greater success in the consumer market, and that's to a certain degree our focus. However, the value proposition on Llano is strong, as an example, in the corporate market as well. Certainly video playback, video conferencing, all those factors are becoming more and more important in the corporate environment.

In addition, of course, as we're seeing, consumer devices and notebooks and desktops and so on are increasingly being also used in the commercial marketplace. Certainly in SMB, but even in enterprise now, they are adopting those consumer platforms.

Glen Yeung - Citigroup - Analyst

Actually, one last quick one, if I might. Just with respect to Bulldozer, I know you guys have deployed some field application engineers into the market, and I'm wondering if you could give me a sense of what the initial response has been as you sort of prep the market for Bulldozer.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

So the first feedback is very positive and welcoming. People appreciate, of course, that we have the significantly higher visibility in the marketplace now in terms of feet on the street, but also in terms of trying to get mind share. The product is exciting. On a platform level, as I said before, the value proposition is exciting, especially for cloud and virtualization applications, and that allows us to be optimistic for the second half.

Operator

John Pitzer, Credit Suisse.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

John Pitzer - Credit Suisse - Analyst

Yes, guys, thanks for taking my question. Tom, can you talk a little bit about what the ASP trends were in the quarter in the core client business? And I guess, given that the server continues to be an area of weakness, I was wondering if you can help me understand the relative size of servers in the revenue line and the profit line, and what you think the trend will look like going into the second quarter? And I guess more importantly, at what point will Bulldozer start to be a positive impact? Is it really a this-year event or do we have to start thinking about 2012? Thanks.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

I'm not going to get more granular in terms of the revenue lines. But I think it's fair to say that we pretty much -- I think we stabilized market share in the first quarter on the server segment, and we will see Bulldozer impact in terms of revenue in the second half. As already said, we would start to ship product in the summer, and that means that we see revenue in the third and, of course, in the fourth quarter.

John Pitzer - Credit Suisse - Analyst

And then, I guess, Thomas, this is my follow-up. On the graphics side, you guys have done a great job on the market-share side over the last several quarters. How do you see that trending going forward? And I guess with kind of the APU coming out, is there any change in your view of sort of discrete attach rates on the client side? Thank you.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Yes, very good. So you know, of course we are really proud that we are able to keep this technology lead.

Moving forward, we have climbed to a high level on the market-share side. The focus is now to make sure that profitability moves in the right corner, too. I think that is going to be the focus moving forward.

For this year, we expect attach rates not to change. There are early research indications that in the first quarter, it might have even gone up, which is also partly reflected in our strong mobile GPU shipments. Moving forward, we'll see that at least at the low end of the graphics stack, there will be some replacement because, especially on our side, the APU performance is really compelling. But for this year, attach rates seem to be holding up or maybe even ticking up slightly.

Rick Bergman - Advanced Micro Devices - SVP, General Manager Product Group

Just to elaborate a little more on that. Obviously, our Llano processors have truly discrete level graphics performance, so in some cases, the market just won't need to add an additional GPU.

But on other platforms out there, certainly if you're buying a \$600, \$700 notebook, you want the latest and greatest GPU architecture, which today is defined by DX11 solutions, and so in that case, you're going to have to add discrete graphics. So that's actually pulling up the attach rate on the other platforms. So, for the summer of 2011, we see it as basically staying the same.

Operator

Tim Luke, Barclays Capital.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Tim Luke - Barclays Capital - Analyst

Just to clarify, Thomas. When you suggest down -- flat to down slightly, is that down one or two percentage points? Is that how we should think about it? And when you articulate that you believe the gross margin will be improved in the calendar second quarter, is that sort of 100 basis points? Is that how we should think about that? And just -- well, perhaps you could just tackle those two.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Good question. So the box we would draw around a flat to slightly down is zero to minus 5%, Robert. It's the right range. And I think you're very much on target with your gross margin expectation. We think it's going to be up around 100 basis points.

Tim Luke - Barclays Capital - Analyst

Just on the ramp of Llano, can you give us a feel for the availability of product and really what sort of metrics we might be able to sort of frame in terms of thinking about how that ramp is likely to progress now?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

So, we achieved -- we made great progress, which allowed us to ship for revenue. We think we have ample of product available in the second quarter.

On the other side, you know, we saw on Brazos that once the product was out and available on the shelf, demand really went up significantly, and we'll try to prepare for such a situation.

Rick Bergman - Advanced Micro Devices - SVP, General Manager Product Group

Again, our key for Llano is to hit the critical cycle in the industry, which is BTSC, or the back-to-school cycle. So we have broad-based OEM platform adoption for that timeframe, and we're well positioned to take advantage of that cycle.

Operator

Srini Pajjuri, CLSA Securities.

Srini Pajjuri - Credit Agricole Securities - Analyst

Thomas, just one more clarification to a previous question. On the OpEx, you said it's going to be about \$620 million. Just wondering if that's going to be a temporary decline or if that's the range that you expect going forward.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

We obviously worked hard to keep our OpEx under tight control. In the second quarter, we see some -- a couple of 28 nm tapeouts hitting R&D costs. But the \$620 million, at this point in time, seems to be a good indication on the cost level moving forward.



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Srini Pajjuri - Credit Agricole Securities - Analyst

Great. And then, a couple of questions. On the ASP front, obviously Brazos looks like it impacted the ASPs. Should we expect ASPs to increase in the next few quarters as Llano ramps or is that a function of, you know, the server business coming back at this point?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Fair question. So I think for the second quarter, it's fair to expect that -- or at least we expect that the -- both ramps equal each other out, so to speak.

In the second -- in the third and fourth quarters, then, ASP performance should go up, higher share of Llano shipments, and then the additional impact of the server shipments.

Srini Pajjuri - Credit Agricole Securities - Analyst

And then, on the server business in general, Thomas, at this market share, I think you have about 5% or 6% market share, are you profitable? That's my first question. And then, if not, what's the sort of market share you need to justify the investments longer term? Thank you.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Fair question. So, we are sitting today at 6.6% market share. Profitability at such a point is borderline, but we feel comfortable that the market-share lift we need in order to reach profitability in this segment is actually very small.

Srini Pajjuri - Credit Agricole Securities - Analyst

And is it double digits, single digits? Would you like to give us a bit more color on that?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

It's very close.

Operator

David Wong, Wells Fargo.

David Wong - Wells Fargo Securities - Analyst

Can you tell us what proportion of Brazos sales in the March quarter were in Ontario versus Zacarte? And does it look like Ontario is being used primarily in netbooks while Zacarte goes into value notebooks.

Rick Bergman - Advanced Micro Devices - SVP, General Manager Product Group

I don't know if we have an exact split on the two parts. Good adoption on both. We are seeing Ontario. It's a very exciting thin and light form factors, but adoption in a whole of different platforms from netbooks up into desktops.

9



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

David Wong - Wells Fargo Securities - Analyst

And when you expect to bring Bulldozer platforms out at the end of the summer, do desktop and server platforms come out at about the same time or does server come out later than desktop?

Rick Bergman - Advanced Micro Devices - SVP, General Manager Product Group

In the last call, we indicated early summer for desktops and late summer for servers, and that's still where we're at.

Operator

Jim Covello, Goldman Sachs.

Jim Covello - Goldman Sachs - Analyst

Can you guys just go by segment -- desktop, notebook, server -- and talk about what your share expectations are for the year?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

As you know, we don't give market-share guidance for the year, and I'm certainly not going to start here now.

I think we always said at our analyst day, we expect our desktop market share to stay about flat, slight gains. Long term, we don't -- there's no reason why our notebook market share should be materially different from our desktop share, and from where we are today on the server side and with the optimism we have on the Bulldozer platform, I think it's fair to say that we expect market-share gains in the second half.

Jim Covello - Goldman Sachs - Analyst

And so, if I look at -- so the issue is from where you are today, because if we look at the full year, it will be tough just because Intel -- of Intel shipments' growth and ASP growth in the first quarter versus yours. But from here is where you would expect to gain the share, kind of mark to market for the end of Q1. Is that the idea?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

I think that's fair.

Jim Covello - Goldman Sachs - Analyst

Okay, and then, can I just -- on the foundry side, obviously there's been a lot of discussion. Obviously you are aligned well with several foundry partners. Could you give us a little bit of an update on who you think you're going to use for what going forward and what the different parameters are there? Thank you very much.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

I think we were really quite open on our last call, so our foundry strategy has not changed. We are pleased with the progress we see. As I said, we expect several 28 nm tapeouts during the current quarter.

10



FINAL TRANSCRIPT

Apr. 21, 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

And you know, we balance our loading according to risk performance and price, but we also said that there is, of course, a natural incentive for us at this point to work closely with GLOBALFOUNDRIES, and that is, of course, something we continue to do.

Operator

Ross Seymore, Deutsche Bank.

Ross Seymore - Deutsche Bank - Analyst

Thomas, could you talk a little bit about -- in your computing solutions group, the difference between what happened in MPUs and chipsets? So, you've done a great job of gaining share in chipsets. I just wonder if that's continued in the first quarter.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Our chipset business in the first quarter was -- we are pleased with the performance we have. Let's put it this way.

Ross Seymore - Deutsche Bank - Analyst

How did it compare versus the competing solutions group as a whole? Better? Worse?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Better.

Ross Seymore - Deutsche Bank - Analyst

Okay. And then, the gross margin, when you talked about that going up roughly 100 basis points sequentially, is there anything driving that other than the positive mix of more APUs?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

At this point in time, it's very much mix driven. The cost impact is there, but slightly only in the current quarter.

Ross Seymore - Deutsche Bank - Analyst

Then my last question, you had an extra week in the first quarter. Any impact either in what happened in the first quarter or your guidance into the second quarter that we should think about, and more so, how your guidance would be different if you weren't losing that week?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

No. To be very honest, the additional week was part of the guidance for the first quarter, and we took that into account. There -- the guidance for the current quarter takes into account that it's one week less.



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Ross Seymore - Deutsche Bank - Analyst

So absent that, you would actually have grown nicely in your guidance in the second quarter?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Yes, I think that's fair to say.

Ross Seymore - Deutsche Bank - Analyst

Great. Thank you.

Operator

Vivek Arya, Bank of America.

Vivek Arya - BofA Merrill Lynch - Analyst

Thanks for taking my question. Thomas, I just wanted to revisit this PC unit growth expectation for the year. I think you mentioned 11% unit growth [three] simple for the year. Could you perhaps give us some more color on where you are seeing the positive sellthrough? Is it consumer? Is it corporate? Is it developed market? Is it emerging markets? Thank you.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

I think our opinion here, and the visibility we have, does not differ materially from what you hear from others.

North America and Western Europe was weak. We don't expect that to change materially. We saw strong demand in the emerging countries all over that spectrum, China, India, especially Latin America for us. We've been putting resources into those regions. I think we mentioned that on several calls in the past that we ramp up our infrastructure in emerging markets.

Of course, our exposure to this consumer segment is significantly higher than to the commercial sector. We have been seeing that the product and the price points we hit, especially with Brazos, are right on the spot of what those market segments demand. And yes, that's pretty much it. Very strong channel business.

Vivek Arya - BofA Merrill Lynch - Analyst

Got it. And as a follow-up, Intel recently raised their CapEx, and they're planning to be very aggressive at next-generation 22 and 40 nm node. How do you look at that, Thomas, from a competitive point of view? What are the implications on AMD? What do you need to do to respond to that, if anything?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

The good thing is we don't have to invest. So from my CFO perspective, I think that is very positive.

No, joke aside. You saw that our partners, GLOBALFOUNDRIES and TSMC, spend an aggregate amount of money that I think even outperforms the Intel investment. I think it's \$8 million on both sides, or \$8 million and \$7 million -- don't quote me here, but a significant amount of money.

12



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

And of course, we work with our partners in terms of the technology we need to be competitive, but I think we've also reached the point where competitiveness in this market segment is defined by more than just the technology roadmap. We just have seen that on Brazos. I think moving forward, we see a lot of more levers that help us to differentiate ourselves and bring highly competitive products into the market. Just take into account the business model we have and the skill set we have, the IP we have, and especially the agility that this business model offers us.

Vivek Arya - BofA Merrill Lynch - Analyst

Got it. And just one last question, if I may. I think in the past you have given long-term targets of getting to 50% gross margin, perhaps better than that. What about the APU gives you better margins? What are really the main drivers from here on to get to that kind of target? Thank you.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

We said that this pretty much comes from different levers. For the low end of our APU strategy, the Brazos product that we are shipping currently that are so hugely successful, for those products it's much more a cost optimization. They're highly gross margin accretive because of good design and chip size efficiencies.

On the APUs, that -- or the spectrum that is covered by the Llano product, that is much more a margin accretive game through price performance and price points at which we can play now.

Vivek Arya - BofA Merrill Lynch - Analyst

Thanks and good luck.

Operator

Christopher Danelly, JPMorgan.

Christopher Danelly - JPMorgan Chase & Co. - Analyst

So we asked your main competitor this. Might as well ask you. It seems as though the commentary/tone of business from you guys and Intel differs somewhat with some other companies in the PC food chain as far as some of the OEMs and the drive companies go. How would you guys explain that discrepancy?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

I don't think, in that case, our arguments are so much different from our competitor.

As I said before, we've seen strong demand patterns out of the emerging markets. We've seen good demand out of the channel business. And I think we saw some uncertainty in some market research that came out early. I think those numbers will be corrected as we move forward. We saw early numbers from Mercury Research that are going to be published soon that also would support that trend that we have been seeing and move more the numbers in the directions that we have been talking about now for a quarter.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Christopher Danelly - JPMorgan Chase & Co. - Analyst

Great. Thanks. Then on gross margin, you talked about your expectations for Q2. Could you maybe give us your thoughts on gross margins in the second half of the year? What would be the drivers either way there?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

So I'm not going to give more granular guidance on gross margins than what we gave for the overall year. But, of course, we are looking forward to see a higher mix of Llano-based products in the second half, and of course, we are looking forward to see stronger shipments into the server segment and getting our Bulldozer-based product into the market, and this would have a substantial impact on gross margin development in the second half.

Christopher Danelly - JPMorgan Chase & Co. - Analyst

Sure, and can you guys give us your take on sort of the tablet market or any kind of tablet strategy that AMD has, or will you wait until the new CEO comes?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

No, we -- you know, we cannot support because of that, and I hope you saw that we work hard delivering on our promises. That's an exciting form factor for us. I think we have a lot of IP, and that is going to play nicely in this field. We are working with multiple OEMs on platforms, and once we are at a good spot to talk about it, we will become more specific on the products and the wins we have.

Christopher Danelly - JPMorgan Chase & Co. - Analyst

Sure, and then, last question. You give us an update on the CEO search. Any rough estimate on the timing of that?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Well, it's in the hands of the Board, so the management -- that's not a management topic. But I think the -- Bruce, our Chairman, was explicit that finding the right candidate is important, more important than hitting a specific time window. They are happy with the progress they have been making and they are actively interviewing.

Operator

Chris Caso, Susquehanna Group.

Chris Caso - Susquehanna Financial Group/SIG - Analyst

I wonder if I could ask a bit about the graphics business going forward, and specifically your market share assumptions there. One of your -- your competitor in that space has made some claims that they're attempting to gain some share specifically in the notebook space this year. I wonder if you could talk about your assumptions.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Rick Bergman - *Advanced Micro Devices - SVP, General Manager Product Group*

Certainly. As we mentioned in the first quarter, based on our shipments it appears actually that we gained some share. We'll see here at the end of the month when Mercury Research numbers come out.

You also heard that we picked up the Apple business as well, which we're thrilled about, of course. In light of their success in the marketplace, that's a big boost for our business as well. We'll see how it plays out.

We feel like we can win in that notebook section in a very interesting way, both with our APUs, which is going to bring an entirely different kind of value into those platforms, as well as our GPUs, and in some platforms they actually play together, where we can actually use dual graphics. So, we feel real good about our position in the overall graphics market.

Chris Caso - *Susquehanna Financial Group/SIG - Analyst*

And if I follow on with a question on servers, and understanding that the -- you're talking about late summer for Bulldozer, but obviously customers moved more slowly in that segment. What's the timeframe when we could expect to see, I guess, some more meaningful share moves or volume moving in that segment, given the amount of time customers need to qualify the product and update their own platforms?

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

Of course, we don't start working with the customers in the summer. We've been engaged with the customers now over a significant period of time, even on the new product.

I said before that we expect significant shipments in the second half, third and especially fourth quarter, and while your statement in general is right, you know, there are specific applications where the design in time and lead time is shorter. For example, in the cloud segment.

Operator

Ambrish Srivastava, BMO.

Ambrish Srivastava - *BMO Capital Markets - Analyst*

Just a couple of quick ones. Thomas, what is the -- I didn't catch it; if you did give it, I do apologize -- expectation for graphics units and ASPs in the second quarter?

And then, the second question on the quick side is what should we expect for the APU percent mix as we head into the back half of the year?

And lastly, on the server side. Is it a matter of just your share is so low that it's going to go up, or architecturally, can you help us understand what your offering will have an advantage over Intel's?

Rick Bergman - *Advanced Micro Devices - SVP, General Manager Product Group*

Sure. We'll start with the back half here on the server question. So one important point to keep in mind is we have a two-year cadence on our platform where the processor can be used in the same platforms as the prior year.



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

So as we move into the Bulldozer-based solutions, they're going to leverage that platform capability, so that allows a shorter time to market, as well as broader platform availability, right out of the gate.

And then, some of the key advantages that we have with Bulldozer, certainly our floating point, our memory bandwidth, and then, obviously, performance per watt, performance per dollar is very compelling with these products. And we've been sampling for multiple months now with Orochi, the Bulldozer-based product, and the reception is fantastic.

And on the former part about graphics, do you want me to take that? On the graphics portion, we're not going to give you exact guidance on the units, but on the ASPs, roughly flat. No big change in our product line going forward there.

Ambrish Srivastava - BMO Capital Markets - Analyst

I'm sorry, the graphics business is expected to be flat in second quarter?

Rick Bergman - Advanced Micro Devices - SVP, General Manager Product Group

In terms of ASP, yes.

Ambrish Srivastava - BMO Capital Markets - Analyst

Okay. And then, what about the third question I had on the APU as a percent of total mix by the end of the year?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

I'm not sure I want to give guidance for that granularity.

Operator

Stacy Rasgon, Sanford Bernstein.

Stacy Rasgon - Sanford C. Bernstein & Company, Inc. - Analyst

I just want to revisit the PC unit growth outlook just briefly again. So I know you said there may have been some issues potentially with the market data, but if you just take it as is -- and I'm just trying to figure out what's wrong with the data. Is the data just like massively negative versus reality, or are you anticipating a hugely above seasonal Q2? I mean, it kind of would take that sort of a profile through the year to get anywhere near double digits PC shipments for the year.

I'm just trying to get a better feeling for where you think the discrepancies in the data are and what do you think kind of Q2 seasonality for PC shipments actually would be to in order to get to the kind of unit guidance that you're talking about?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Yes, I mean, the guidance we gave for the second quarter still is consistent with where we think the market is going to go for the year. And our own model has been rather stable around this value now for a significant period of time.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

I think that a significant discussion came about what really was expected for PC shipments to happen in the first quarter, and part of that negative sentiment came from an expectation that year over year, the first quarter would be negative, and I think the numbers that we start to see now are not reflecting a negative growth year over year in the first quarter.

Stacy Rasgon - Sanford C. Bernstein & Company, Inc. - Analyst

So sequentially, though, in the first quarter, the data showed it down 10 to 13, so you're saying it was actually maybe down five sequentially? Or was it flat? Literally, the way it is, you would need to have PC growth up 10% in Q2 from the numbers in Q1 to get anywhere near, even close to a double-digit growth for the year. I'm just trying to get a better feeling for where the discrepancies are because it just seems like a big mess. (Multiple speakers)

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

The numbers I have in my head now are year over year. So, let's just see how we align that.

I think the negative expectation was that it would be down by minus 3%, minus 4% year over year on the first quarter. We see now research that will, I think, come out more in the next days that now will change back into a probably up 7% range. Our own expectations, I think, are somewhere in the middle between plus 3% to 4% of shipment growth in the first quarter, and I think that is -- if you put that on a line and keep our guidance for Q2 in mind, that is a consistent statement.

Stacy Rasgon - Sanford C. Bernstein & Company, Inc. - Analyst

So you're saying that you think the market data shows a 10 percentage point discrepancy in year-over-year PC unit growth versus the data that was published? Up seven versus down three?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

That is what we -- what the indication is currently, yes.

Stacy Rasgon - Sanford C. Bernstein & Company, Inc. - Analyst

Wow, okay. For my follow-up, a quick question for you. In terms of the wafer purchase agreement range for this year, \$1.1 billion to \$1.5 billion, can you give me some feeling what drives the variance in that? Is that just strictly a demand-driven thing? Is that a cost-driven variance? What is actually driving that \$400 million range for this year?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

It's a demand-driven statement, primarily, and maybe some incentive-driven adjustments to that.

Stacy Rasgon - Sanford C. Bernstein & Company, Inc. - Analyst

Can you elaborate on that? Incentive driven? (Multiple speakers). I thought the incentive driven didn't come until 2012.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

(Multiple speakers). Yes, we said on the call when we went through our WSA agreement that we have some arrangements in place that incentivize GLOBALFOUNDRIES to outperform current plans and targets. And of course, we would benefit in more volume or better yield.

Stacy Rasgon - Sanford C. Bernstein & Company, Inc. - Analyst

I thought that came on in 2012. I thought that was the \$400 million between the \$1.5 billion and the \$1.9 billion in 2012.

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Yes, but there are also some light parts and some flexibility in the first year. But primarily, it's a demand statement.

Stacy Rasgon - Sanford C. Bernstein & Company, Inc. - Analyst

Got it. And I guess one last question for you. In terms of that wafer supply agreement, my understanding is you give them a fixed wafer forecast, and so you are on a die by this year. You go to a cost-plus in 2012. What that means is if the yields are bad in 2012, you get fewer good dies, but you don't make the fixed payment. If yields are really good, same wafers, you get more good dies so your die cost goes down, but you make the fixed payment. So it's sort of a buffer. You don't benefit from yield upside in 2012 versus the way you would in 2011.

I'm just trying to figure out, on top of -- that sort of implies if yields are very good, you get a lot more good dies. You have to be able to sell all the good dies that you actually receive. Are you sort of baking any kind of -- what sort of, I guess, cautions or anything else in your wafer forecasts are you giving them to make sure that no matter what the yield situation at GLOBALFOUNDRIES is in 2012, you will be able to actually sell everything that you get?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

Yes, I think this sounds more complicated now than it really is. I think in 2012 we move more towards a normal foundry relationship.

You know, we also have to forecast wafer and product demand with TSMC, so I mean, that is not significantly different. And also in normal foundry relationships, you have situations especially when you ramp up new technologies and new products that you start with a die by -- a die-based purchasing agreement and convert to a wafer-based agreement once the yield is up or the product is mature.

So there's nothing that dramatically different from what we do with GLOBALFOUNDRIES. We've extended the period of the die by for this year to protect -- when we originally started, as I said, to protect our downside. With the progress they have been making, it's really more a downside protection at this point in time.

We are not worried at this point in time by overforecasting demand. I think we have the degree of sophistication with which we handle such processes and have learned to handle such processes is well established within the Company.

Ruth Cotter - Advanced Micro Devices - IR

Operator, we'll be happy to take two more questions, please.



Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Operator

Sure thing. Our next questioner in queue is Doug Freedman, Gleacher & Company.

Doug Freedman - Gleacher & Company - Analyst

Thomas, if I could ask you to have a little bit of a conversation with yourself since you're wearing two hats of the CEO and CFO, how do we think about you setting the goals for the Company financially here?

We're running into -- this is sort of the first quarter year on year where we didn't get earnings growth, and it's largely because of growth in OpEx. Can you discuss with us what actions you would take on the OpEx side to return to sort of a year-on-year earnings growth type of scenario, or how many quarters, how long do we need to search for that revenue growth and how we should think about you trying to make some of those challenging decisions?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

They are quite straightforward, to be very honest, and you saw some of the effects already in the first quarter, and we provided a guidance of [650] and we've been really tough on ourselves on how we managed operating expenses. This allowed us to come in significantly under the guidance we originally gave.

I mentioned that we have a significant amount of cross-functional activities started in the Company across our core processes to redesign them for scalability, but especially also for productivity, across R&D, across sales and marketing, and also supply chain, and we expect significant productivity levers out of those initiatives. And I think you also see it already partly reflected in the guidance we gave for Q2. I said it's going to be around \$620 million for operating expenses in total.

But it includes, as I said, the first couple of 28 nm tapeouts already. So, we will be tough on operating expenses. I think the discipline that we try to instill in the Company is something we will keep our grip on.

Doug Freedman - Gleacher & Company - Analyst

So I guess another way for me to think about this, is it possible for you to have revenue growth in excess of your operating spending growth this year, or is this a year that we need to think about you investing a little faster than the revenue growth one?

Thomas Seifert - Advanced Micro Devices - Interim CEO, SVP, CFO

I would very much expect that our revenue outgrows our operating expenses.

Doug Freedman - Gleacher & Company - Analyst

Great. Thank you.

Operator

Cody Acree, Williams Financial.



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

Cody Acree - *Williams Financial Group - Analyst*

Thanks for fitting me in here. Going back to an earlier question about kind of your comparison of order rates versus what Intel had seen. Intel definitely got some atypical seasonality heading into their product launch, a big burn in the channel and then a big restocking. What are you seeing as far as typical seasonality of order patterns ahead of both Brazos and Llano?

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

You know, we -- even if it disappoints you, I cannot give you much different arguments, to be very honest.

We felt very strong channel demand, partly driven by the products that we started to ramp, also in part restocking of their Q4 burndown. The visibility we have into their inventories does not indicate any alarming things. Inventories seem to be lean and in line with what you expect for the business at this time in the cycles. And we had a couple of emerging markets where our products -- or our platform-based products were sold out on the shelf. So, not much more to add to that.

Cody Acree - *Williams Financial Group - Analyst*

So I guess, did you see a material burn that now is -- that had a benefit of a replacement in the first quarter for Brazos? And do you expect in the June quarter, maybe June and into September, a similar restocking benefit with Llano?

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

We are optimistic about our Llano launch.

Cody Acree - *Williams Financial Group - Analyst*

Great. Thanks, guys. And one last thing here. Gross margin trends into the second half as you get the mix of Llano coming in and then Brazos -- or excuse me, Bulldozer uptick in there. What kind of trends could we expect to see from a mix shift?

Thomas Seifert - *Advanced Micro Devices - Interim CEO, SVP, CFO*

I'm not going to get more granular. We gave guidance for the complete year, and with those trends I think we moved to the high end of the gross margin guidance we gave in the second half.

Operator

Thank you. That concludes our time for questions and answers, and this also concludes today's program. Attendees, thank you for your participation, and have a wonderful day. You may now all disconnect.



FINAL TRANSCRIPT

Apr. 21. 2011 / 9:00PM, AMD - Q1 2011 Advanced Micro Devices Inc Earnings Conference Call

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Exhibit 63

Darren Grasby Confidential
June 22, 2016

1

Page 1

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF CALIFORNIA

BABAK HATAMIAN and LUSSA)
DENNJ SALVATORE, individually)
and on behalf of all others)
similarly situated,)
Plaintiffs,)
VS.) CIVIL ACTION NUMBER:
14-cv-00226-YGR
ADVANCED MICRO DEVICES, INC.,)
RORY P. READ, THOMAS J.)
SEIFERT, RICHARD A BERGMAN,)
AND LISA T. SU,)
Defendants.)

CONFIDENTIAL

ORAL/VIDEO DEPOSITION OF

DARREN GRASBY

JUNE 22, 2016

ORAL DEPOSITION OF DARREN GRASBY, produced as a
witness at the instance of the Plaintiffs, was duly
sworn, was taken in the above-styled and numbered cause
on the JUNE 22, 2016, from 9:26 a.m. to 6:15 p.m.,
before Chris Carpenter, CSR, in and for the State of
Texas, reported by machine shorthand, at the offices of
AMD, 7171 Southwest Parkway, Austin, Texas 78735,
pursuant to the Federal Rules of Civil Procedure and the
provisions stated on the record or attached hereto.

2 to 5

Page 4

Joe Bazan, Videographer

1	108	E-Mail Chain Ending 9/15/2011 and Attachments	179
2			
3	109	E-Mail Chain 9/13/2011	184
4	110	E-Mail Chain Ending 9/20/2011 and Attachment	193
5	111	E-Mail Chain Ending 11/11/2011 and Attachment	202
6			
7	112	E-Mail Chain Ending 12/11/2011	210
8	113	E-Mail, 11/20/2012 and Attachment	213
9	114	E-Mail Chain, 3/20/2012	217
10	115	E-Mail, 3/30/2012 and Attachment	220
11	116	E-Mail Chain Ending 3/30/2012	230
12	117	E-Mail Chain, 5/2/2012	237
13	118	E-Mail, Bates AMD-003-00478390	242
14	119	E-Mail Chain Ending 5/19/2012	248
15	120	E-Mail Chain, 5/23/2012	256
16	121	E-Mail Chain, 5/28/2012	258
17	122	E-Mail Chain, 5/29/2012	259
18	123	E-Mail Chain, 6/24/2012	262
19	124	E-Mail Chain, 6/22/2012	264
	125	E-Mail Chain Ending 7/7/2012	270

8	NO.	DESCRIPTION	PAGE MARKED
9	92	Deposition Notice	9
10	93	Subpoena	9
11	94	E-Mail, 8/12/2011 and Attachments	56
12	95	E-Mail Chain Ending 3/9/2011 and Attachments	86
13	96	Article: AMD Ushers in Next Generation of Computing with AMD A-Series APUs	92
14	97	E-Mail, 4/14/2011	95
15	98	E-Mail Chain Ending 6/26/2011 and Attachments	103
16	99	E-Mail Chain Ending 5/3/2011	113
17	100	E-Mail Chain Ending 7/15/2011	123
18	101	E-Mail Chain Ending 7/19/2011 & attachment	134
19	102	E-Mail Chain Ending 7/19/2011	146
20	103	E-Mail Chain Ending 7/14/2011	151
21	104	E-Mail Chain Ending 7/15/2011	151
22	105	E-Mail, 8/12/2011 and Attachment	151
23	106	E-Mail Chain Ending 8/15/2011	164
24	107	E-Mail Chain Ending 8/22/2011	168

1 THE VIDEOGRAPHER: This is the videotaped
2 deposition of Darren Grasby taken in the Labaton --
3 taken by -- excuse me -- Labaton Sucharow in the matter
4 of Hatamian, et al, versus Advanced Micro Devices, Inc.,
5 et al, in the United States District Court, Northern
6 District of California. Case Number 14-CV-00226-1DR.
7 This deposition is being held at Advanced Micro Devices
8 on June 22nd, 2016. My name is Joe Bazan from U.S.
9 Legal Support, and I am the video specialist. The court
10 reporter today is Chris Carpenter, also from U.S. Legal
11 Support. We are going on the record at 9:26 a.m. Will
12 counsel please state their appearances for the record?

13 MS. VILLEGAS: Carol Villegas from Labaton
14 Sucharow for lead plaintiffs in the class.

15 MR. CHRISTIE: James Christie from Labaton
16 Sucharow for lead plaintiffs in the class.

17 MR. RAWLINSON: Matt Rawlinson of Latham &
18 Watkins on behalf of the defendants.

19 MS. OZMUN: Elizabeth Ozmun from AMD on
20 behalf of AMD.

21 MS. MACDANIEL: Karon Macdaniel from AMD
22 on behalf of AMD.

23 THE VIDEOGRAPHER: Will the court reporter
24 please swear in the witness?

25 (Witness sworn.)

June 22, 2016

66 to 69

<p style="text-align: right;">Page 66</p> <p>1 A. Yes. Yeah.</p> <p>2 Q. And there were different models of Llano; is</p> <p>3 that right?</p> <p>4 A. Yes. Yeah.</p> <p>5 Q. So there was an A4; is that right?</p> <p>6 A. Yep.</p> <p>7 Q. And then an A6?</p> <p>8 A. Yep.</p> <p>9 Q. And then an A8?</p> <p>10 A. Yes.</p> <p>11 Q. And in terms of pricing or ASPs, which one was</p> <p>12 more expensive?</p> <p>13 A. An A8 would be more expensive.</p> <p>14 Q. And then would it be an A6 below that?</p> <p>15 A. Yes.</p> <p>16 Q. And then an A4?</p> <p>17 A. Yes. Yeah.</p> <p>18 Q. And there were also Llano chips with different</p> <p>19 amounts of cores in them; is that right?</p> <p>20 A. Correct, yeah.</p> <p>21 Q. So there were some chips that had 2 cores?</p> <p>22 A. Yeah.</p> <p>23 Q. Is that right? And some chips that had 3</p> <p>24 cores?</p> <p>25 A. Yes.</p>	<p style="text-align: right;">Page 68</p> <p>1 them would suggest that there was demand, yeah.</p> <p>2 Q. What do you mean by you create demand?</p> <p>3 A. Talk to customers, advertise; you know, general</p> <p>4 demand generation that any vendor that would do, so...</p> <p>5 Q. And just in terms of how the Llano chip was</p> <p>6 used, there were -- there were desktop computers that</p> <p>7 used Llano; is that right?</p> <p>8 A. Yes.</p> <p>9 Q. And there were also notebooks or laptops that</p> <p>10 used Llano?</p> <p>11 A. Yes.</p> <p>12 Q. Would it be a different chip, or would it be</p> <p>13 the same chip?</p> <p>14 A. I mean, on the notebook side, I'm not involved</p> <p>15 in the notebook side.</p> <p>16 Q. Okay.</p> <p>17 A. So it would be hard for me to say that, so...</p> <p>18 Q. So was the channel primarily the desktop</p> <p>19 computers?</p> <p>20 A. Yes.</p> <p>21 Q. And have you heard of the code name Links as it</p> <p>22 refers to Llano in a desktop?</p> <p>23 A. No.</p> <p>24 Q. What about the -- the name Sabine or Sabine;</p> <p>25 have you heard of that?</p>
<p style="text-align: right;">Page 67</p> <p>1 Q. And some chips that had 4 cores.</p> <p>2 A. Yes.</p> <p>3 Q. And would the 4-core chip be the strongest chip</p> <p>4 in terms of performance?</p> <p>5 A. Yes. It would have been, yeah.</p> <p>6 Q. And what about in terms of price, would 4-core</p> <p>7 chips be more expensive than 2-core chips?</p> <p>8 A. Yes.</p> <p>9 Q. And at some point during the class period,</p> <p>10 during the time period -- just to remind you, April 2011</p> <p>11 through October 2012 -- AMD also manufactured Llano no</p> <p>12 GPUs; is that right?</p> <p>13 A. Correct, yes.</p> <p>14 Q. Why did AMD do that?</p> <p>15 MR. RAWLINSON: Object to the form.</p> <p>16 A. I cannot answer that. I mean, I'm not involved</p> <p>17 in the design or the -- or the bring up of the silicon,</p> <p>18 you know, with -- with the sales guys.</p> <p>19 Q. (By Ms. Villegas) From your perspective as a</p> <p>20 sales guy in the channel, was it hard to sell Llano with</p> <p>21 no GPUs in it?</p> <p>22 A. No. I mean, we -- we sold them, so...</p> <p>23 Q. Was there a demand in the market for Llano with</p> <p>24 no GPU?</p> <p>25 A. You create demand, so the fact that we sold</p>	<p style="text-align: right;">Page 69</p> <p>1 A. I have heard of that name.</p> <p>2 Q. And what is that name?</p> <p>3 A. It's not to do with the channel.</p> <p>4 Q. Okay. Is that referring to a Llano in a laptop</p> <p>5 or a notebook?</p> <p>6 A. I cannot remember. I don't know, because it's</p> <p>7 not my part of the business.</p> <p>8 Q. Okay. How else did people refer to Llano in</p> <p>9 desktops? Were there any other names that they used?</p> <p>10 A. For the channel, no. It was Llano.</p> <p>11 Q. It was Llano?</p> <p>12 A. Yeah.</p> <p>13 Q. Now, I'm asking generally here, just based on</p> <p>14 your experience and your years in the business, once you</p> <p>15 launch a chip, how long is the life cycle of that chip?</p> <p>16 MR. RAWLINSON: Object to the form.</p> <p>17 A. It can be various. It really varies on the</p> <p>18 chip. I mean -- I mean, it -- we're selling stuff now</p> <p>19 that's five years old, for example. So it really</p> <p>20 depends on the -- on the chip itself.</p> <p>21 Q. (By Ms. Villegas) And the stuff that you're</p> <p>22 selling now that's five years old, are you selling it at</p> <p>23 the same price that you would have sold it when the chip</p> <p>24 launched?</p> <p>25 A. I can't answer that. I can't remember without</p>

June 22, 2016

70 to 73

<p style="text-align: right;">Page 70</p> <p>1 going back.</p> <p>2 Q. Would you agree with me, just generally, that</p> <p>3 AMD is working -- that AMD generally works on developing</p> <p>4 new technology in order to be competitive in the market?</p> <p>5 MR. RAWLINSON: Object to the form.</p> <p>6 A. You have to be competitive in the market with</p> <p>7 your technology. So yes. I mean, you have to be</p> <p>8 competitive.</p> <p>9 Q. (By Ms. Villegas) And does that mean coming out</p> <p>10 with new products on a regular basis?</p> <p>11 MR. RAWLINSON: Object to the form.</p> <p>12 A. You're a technology company, so you have to be</p> <p>13 with the market, yes.</p> <p>14 Q. (By Ms. Villegas) Just going back to Llano, how</p> <p>15 long would you say Llano's life span was?</p> <p>16 A. I can't remember without looking. I don't</p> <p>17 know.</p> <p>18 Q. Was it about a year?</p> <p>19 A. I would say it would have been a bit longer.</p> <p>20 Q. About two years?</p> <p>21 A. I don't know. It was -- it was longer than a</p> <p>22 year, but I don't know.</p> <p>23 Q. Okay. Is AMD still selling Llano?</p> <p>24 A. No.</p> <p>25 Q. When --</p>	<p style="text-align: right;">Page 72</p> <p>1 a socket on it.</p> <p>2 Q. And were there -- was there a specific chipset</p> <p>3 that worked with Llano?</p> <p>4 A. Llano was FM1.</p> <p>5 Q. And did that chipset work with any other chip?</p> <p>6 A. No.</p> <p>7 Q. Have you heard of D2s or D3s as they relate to</p> <p>8 chipsets?</p> <p>9 A. That's a memory term that you have there.</p> <p>10 Q. What is a D2?</p> <p>11 A. It's a memory chip.</p> <p>12 Q. And did the D2 work with the Llano?</p> <p>13 A. I can't remember on the specification.</p> <p>14 Q. Okay. And what about PIB; what does that stand</p> <p>15 for?</p> <p>16 A. PIB is processor in a box.</p> <p>17 Q. What is that?</p> <p>18 A. It's when we take a processor, put it in a</p> <p>19 retail box, and it goes on a shelf. So it's a -- it's a</p> <p>20 retail product.</p> <p>21 Q. And is the purpose of that so that someone can</p> <p>22 take a chip and build their own computer?</p> <p>23 A. I mean, every chip has to go into a computer,</p> <p>24 so -- so, yes. Yeah.</p> <p>25 Q. And so when you sell the chipset and the chip</p>
<p style="text-align: right;">Page 71</p> <p>1 A. Well, not in my part of the business.</p> <p>2 Q. Is it selling Llano at all?</p> <p>3 A. I don't know.</p> <p>4 Q. When did AMD stop selling Llano in the channel?</p> <p>5 A. I don't know. It was -- I don't know. I can't</p> <p>6 give you an exact date.</p> <p>7 Q. Can you give me a general point in time? Was</p> <p>8 it during 2012?</p> <p>9 A. No. I don't know. I don't know. I really</p> <p>10 don't know. But it was longer -- it was longer than we</p> <p>11 definitely went into the end of 2012, probably into</p> <p>12 early '13 even.</p> <p>13 Q. Okay. So I just want to go back to the</p> <p>14 motherboard manufacturers for a minute, the ODMs.</p> <p>15 So does -- does AMD sell the chipsets to</p> <p>16 the ODMs?</p> <p>17 A. Yes.</p> <p>18 Q. And then the ODMs build the chipsets into the</p> <p>19 motherboards?</p> <p>20 A. That's it, yeah.</p> <p>21 Q. And the ODMs also build a socket into the</p> <p>22 motherboard so that the chip can be placed inside of it?</p> <p>23 Is that how it works?</p> <p>24 A. Yes. It's as -- per your comment a minute ago,</p> <p>25 when they built the motherboard, the motherboard has got</p>	<p style="text-align: right;">Page 73</p> <p>1 together, is that called kitted?</p> <p>2 A. I don't sell --</p> <p>3 Q. Or a kit?</p> <p>4 A. I don't sell chipset and kit together. It's</p> <p>5 two separate transactions for me.</p> <p>6 Q. Would one of the channel customers put the</p> <p>7 chipset and the chip together and sell it?</p> <p>8 A. I don't know. I mean, it's -- that's not</p> <p>9 our -- that's their business, it's not ours, so I don't</p> <p>10 know.</p> <p>11 Q. Have you heard the term kitted?</p> <p>12 A. Not in my business, no.</p> <p>13 Q. Who would determine the price of the chipsets</p> <p>14 at AMD?</p> <p>15 A. Just to quantify your question there, is that</p> <p>16 the chipset for the motherboard or the chipset -- are</p> <p>17 you talking CPU? Which bit you asking?</p> <p>18 Q. Let's start with the motherboard.</p> <p>19 A. The business unit.</p> <p>20 Q. Okay. And what about the CPU?</p> <p>21 A. The same, the business unit.</p> <p>22 Q. So AMD would sell separately the chipset and</p> <p>23 then the chip; is that right?</p> <p>24 A. I would sell the chipset to the ODMs.</p> <p>25 Q. H-huh.</p>

June 22, 2016

78 to 81

<p style="text-align: right;">Page 78</p> <p>1 MR. RAWLINSON: Object to the form.</p> <p>2 A. No. No. They're busy seasons for us, but</p> <p>3 they're -- they're not critical to our business, no.</p> <p>4 Q. (By Ms. Villegas) Are there any seasons that</p> <p>5 are critical to the business?</p> <p>6 A. No. There's spot days, Black Friday, and,</p> <p>7 actually, in this part of the world. But no. I mean,</p> <p>8 it's -- it's a -- it's a global business 365 days of the</p> <p>9 year, and each geography is different.</p> <p>10 Q. And is Black Friday part of the holiday selling</p> <p>11 season?</p> <p>12 A. I would say no, but I think in the context of</p> <p>13 everyone else, I think you'd all say yes, but...</p> <p>14 Q. Would you agree with me, though, that the back</p> <p>15 to school and holiday are important selling seasons for</p> <p>16 AMD?</p> <p>17 A. Again, for my part of the business they're not</p> <p>18 critical.</p> <p>19 Q. But would you consider them to be important?</p> <p>20 MR. RAWLINSON: Objection to the form.</p> <p>21 A. They're not critical to my part of the</p> <p>22 business, but they're clear cycles within the calendar</p> <p>23 that are important.</p> <p>24 Q. (By Ms. Villegas) So back to school sales, when</p> <p>25 does that occur? And if you want to look at your</p>	<p style="text-align: right;">Page 80</p> <p>1 from you to be able to sell the chip? And so let me</p> <p>2 rephrase that.</p> <p>3 If the back-to-school selling season</p> <p>4 starts, say, work week 32, would AMD need to ship the</p> <p>5 chip in work week 29 or work week 30?</p> <p>6 A. Again, it depends in the world where people</p> <p>7 are. I mean, every region is different. But if you're</p> <p>8 selling to a system integrator, which is what we're</p> <p>9 talking about here, you know, they'll need it two or</p> <p>10 three weeks before to manufacture and then sell.</p> <p>11 Q. And so in terms of holiday, which you mentioned</p> <p>12 would be Q4, so October, November and December?</p> <p>13 A. Yeah.</p> <p>14 Q. If one of your channel customers wanted to</p> <p>15 start selling for holiday in October, work week 41?</p> <p>16 A. Yeah.</p> <p>17 Q. They would need to get the chip at least two to</p> <p>18 three weeks before that, so say work week 38?</p> <p>19 A. Not necessarily, because there's an assumption</p> <p>20 there that you're talking about system integration</p> <p>21 selling the PC. If you're a Newegg or an Amazon, for</p> <p>22 example, you could take the chip on a Monday and sell it</p> <p>23 on a Tuesday, because you're selling chip on its own.</p> <p>24 Q. So for the system integrators, it would be two</p> <p>25 to three weeks?</p>
<p style="text-align: right;">Page 79</p> <p>1 calendar just to see if that refreshes your</p> <p>2 recollection.</p> <p>3 A. Again, it's not a -- it's not a massive part of</p> <p>4 my business. So back-to-school sales is usually during</p> <p>5 August. August, September, October.</p> <p>6 Q. So would you say that back-to-school sales</p> <p>7 would start at work week 32 and go into potentially work</p> <p>8 week 41?</p> <p>9 A. I can't answer that, because it's -- again,</p> <p>10 it's not a massive part of my business, so I don't know.</p> <p>11 Q. Did you ever deal with back-to-school sales</p> <p>12 with your customers?</p> <p>13 A. Back-to-school sales would be discussed, but it</p> <p>14 was a tiny fraction of our business.</p> <p>15 Q. What fraction of your business was it?</p> <p>16 A. I can't remember. I don't remember.</p> <p>17 Q. And what about holiday, when would holiday</p> <p>18 sales start?</p> <p>19 A. I mean, holiday sales are, essentially, really</p> <p>20 Q4. I mean, obviously, with a spike in November,</p> <p>21 December.</p> <p>22 Q. So just in terms of the lead times that we were</p> <p>23 talking about before, if one of your customers wanted to</p> <p>24 sell a product for back to school, they would need a</p> <p>25 minimum of two to three weeks in order to get the chip</p>	<p style="text-align: right;">Page 81</p> <p>1 A. Correct.</p> <p>2 Q. For the motherboard manufacturers, it would be</p> <p>3 two or three weeks?</p> <p>4 A. Correct.</p> <p>5 Q. But for someone like a Newegg, it could just be</p> <p>6 a couple of days?</p> <p>7 A. Yeah.</p> <p>8 Q. So would you agree with me that for the -- the</p> <p>9 system integrators and the motherboard manufacturers, if</p> <p>10 they wanted to start selling at the beginning of the</p> <p>11 holiday selling season, they would need to get the chip</p> <p>12 in work week 38?</p> <p>13 A. Yeah, but then don't forget that goes through</p> <p>14 the whole season. You'll -- it's not -- holiday season</p> <p>15 is not a point in the sand.</p> <p>16 Q. Right.</p> <p>17 A. The same as back to school is not a point in</p> <p>18 the sand. It goes on for a period of time. So it's not</p> <p>19 a you have to have everything delivered by that date.</p> <p>20 Holiday runs through the whole of Q4, so...</p> <p>21 Q. And on this calendar, Black Friday would be</p> <p>22 work week 48. Would you agree with me on that? Is</p> <p>23 that --</p> <p>24 A. Which one are you looking at?</p> <p>25 Q. So 2011. So Black -- Black Friday usually</p>

June 22, 2016

274 to 277

<p style="text-align: right;">Page 274</p> <p>1 there was two distinct external economic happenings, 2 experiences that caused a challenge on the market. 3 Analysts reported on it, everyone has reported on it. 4 Q. Would you receive reports about motherboard 5 sales on a regular basis? 6 A. They would be ad hoc. The motherboard -- the 7 manufacturers are very protective of their data, so 8 they'll be ad hoc when they come in. We do get them, 9 but I -- I always used to take the reports with a pinch 10 of salt, because what they're telling us is that, you 11 know, they're also going to be telling Intel something, 12 and they could be using the reports to influence a sales 13 discussion in that quarter. So I always used to take 14 them with a pinch of salt. 15 MS. VILLEGAS: Understood. Okay. I think 16 I'm done. May I have a minute? 17 MR. RAWLINSON: Sure. 18 THE VIDEOGRAPHER: Off the record. 19 (Recess taken from 6:10 to 6:15 p.m.) 20 THE VIDEOGRAPHER: Back on the record 21 6:15. 22 MS. VILLEGAS: I have no further 23 questions. Thank you very much, Mr. Grasby. 24 THE WITNESS: Thank you. 25 MS. VILLEGAS: We would reserve signature,</p>	<p style="text-align: right;">Page 276</p> <p>1 CHANGES AND SIGNATURE 2 RE: HATAMINA, ET AL. VS. AMD, ET AL. 3 PAGE LINE CHANGE REASON 4 _____ 5 _____ 6 _____ 7 _____ 8 _____ 9 _____ 10 _____ 11 _____ 12 _____ 13 _____ 14 _____ 15 _____ 16 _____ 17 _____ 18 _____ 19 _____ 20 I, DARREN GRASBY, have read the foregoing 21 deposition and hereby affix my signature that same is 22 true and correct, except as noted above. 23 _____ 24 _____ 25 DARREN GRASBY</p>
<p style="text-align: right;">Page 275</p> <p>1 so we will review and sign. 2 No questions at this time. 3 VIDEOGRAPHER: This concludes the 4 deposition. We're off the record at 6:15 p.m. 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25</p>	<p style="text-align: right;">Page 277</p> <p>1 IN THE UNITED STATES DISTRICT COURT 2 FOR THE NORTHERN DISTRICT OF CALIFORNIA 3 4 BABAK HATAMIAN and LUSSA) 5 DENNJ SALVATORE, individually) 6 and on behalf of all others) 7 similarly situated,) 8) 9 Plaintiffs,) 10) 11 VS.) CIVIL ACTION NUMBER: 12) 14-cv-00226-YGR 13 ADVANCED MICRO DEVICES, INC.,) 14 RORY P. READ, THOMAS J.) 15 SEIFERT, RICHARD A BERGMAN,) 16 AND LISA T. SU,) 17) 18 Defendants.) 19 20 21 22 23 24 25</p> <p>REPORTER'S CERTIFICATION ORAL/VIDEO DEPOSITION OF DARREN GRASBY JUNE 22, 2016</p> <p>I, Chris Carpenter, Certified Shorthand Reporter in and for the State of Texas, hereby certify to the following: That the witness, DARREN GRASBY, was duly sworn by the officer and that the transcript of the oral deposition is a true record of the testimony given by the witness; That the deposition transcript was submitted on the ____ day of _____, 2016, to the witness or to the attorney for the witness for examination, signature and return to _____, by _____, 2016, and if returned, the original transcript will forwarded to Carol</p>

June 22, 2016

278

Page 278

1 Villegas, the custodial attorney;

2 That the amount of time used by each party at the
3 deposition is as follows:

4 Ms. Villegas: 6 hours, 59 minutes

5 I further certify that I am neither counsel for,
6 related to, nor employed by any of the parties or
7 attorneys in the action in which this proceeding was
8 taken, and further that I am not financially or
9 otherwise interested in the outcome of the action.

10 Certified to by me this 26th of June, 2016.

11

12

13



14

Chris Carpenter, Texas CSR 1151

15

Expiration Date: 12/31/2016

16

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23

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Exhibit 64



PRODUCTS GROUP BUSINESS UNIT REVIEW

Q2 2011

TABLE OF CONTENTS

Executive Overview	2
Computing Solutions Review	6
Graphics Review	14
Revenue by Region	18
Revenue by Customer	19
Manufacturing and Inventory	21
Seasonality and Market Share	26
Additional Schedules	
Historical CSG Data	28
Historical GPG Data	29
Revenue/Units/ASP by Segment & Brand	32
Revenue by Technology	36

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Executive Overview

AMD

Q211 AMD revenue was **\$1.574B**, down 2% from Q111 (\$1.613B) and down 5% vs. Q210 (\$1.653B). In percentage terms for externally reported segments, CSG was up (1%) and GPG down (11%) sequentially. The decline in Q211 revenue compared to Q111 was driven by a decline in overall ASP (driven primarily by Desktop and Server), partially offset by an increase in overall unit shipments (driven by Notebook and Chipsets).

Computing Solutions Group (CSG)

Q211 CSG revenue was **\$1.207B**, up 1% from Q111 (1.200B) and flat (-0.3%) vs. Q210 (\$1.212B). The increase in Q211 revenue compared to Q111 was due to 8% increase in unit shipments (driven by Notebook and Chipset), offset by 7% decline in ASP (driven by Desktop and Server).

Client (Notebook, Desktop & Chipset)

Client Q211 revenue was **\$1,096M**, up 3% from Q111 (\$1.065B) and up 7% from Q210 (\$1.027B)

- **Notebook achieved record unit shipments of 7.7Mu** eclipsing the prior record of 7.3Mu in Q310
- **AMD launched the Notebook Sabine platform on June 14th**
- Executed successful Llano APU launch with 150+ Notebook and Desktop design wins.
- **Llano demand exceeded supply with shipments of 1Mu Notebook and 70ku Desktop APU's.**
- Desktop and Notebook combined for 2.9M Hudson2 Chipset units at an ASP of >\$17, priming the channel for a large Q3 Fusion Llano ramp.
- **Brazos shipped 5.8Mu across Desktop and Notebook representing 57% QoQ unit growth**

Notebook

Notebook revenue was **\$290M**, up 19% from \$244M in Q111. ASP was up \$2 to \$38 primarily due to Llano Sabine. Unit shipments totaled 7.7Mu exceeding the prior record of 7.3Mu in Q310.

- Notebook Ontario Brazos and Llano Sabine represented 78% of total notebook shipments and 72% of notebook revenue.
- Llano Sabine began volume shipments totaling 1Mu with A4, A6 and A8 shipments. Demand exceeded supply throughout the quarter.
- Notebook Ontario Brazos APU shipments set a record at 5.1Mu.
- Danube shipments declined 52% to 1.7Mu.

Desktop

Desktop revenue was **\$570M**, a decrease of 5% from \$603M in Q111 primarily due to a \$3 ASP decline. Overall units were 11.3Mu vs. 11.1Mu in Q111.

- Channel ASP's fell \$6 QoQ due to a decline on Phenom II ASP and unit sales declined ~10% related to competitive pressures.
- Channel sales declined \$20M overall; China growth of \$16M was offset by a \$30M decline in EMEA and a \$8M decline in APAC.
- The first desktop Llano Lynx APU shipment of 70ku helped contribute to ~ 800ku APU Desktop shipments in the quarter.

Chipset

Q211 Chipset revenue of \$236M, a record, was up \$19M (9%) from Q111 and up \$16M (7%) compared to Q210 (\$220M). Chipset ASP's declined slightly to \$14.86 due to a higher mix of low end Desktop Chipsets (760G) shipped to Lenovo and Channel customers. Q211 Unit shipments of 16Mu were up 12% from Q111 14Mu.

- Fusion Notebook Chipset revenue **increased by \$43M/3Mu Q-O-Q to \$90M/6.6Mu** primarily due to shipment of 6Mu Hudson 1 in support of Ontario. There was also \$23M/1.4Mu of Hudson 2 shipped in support of Llano
- **Fusion Desktop Chipset revenue increased by \$35M/2mu** due to increases to HP and Channel Partners accepting 1.5Mu of Hudson3 in support of the Q311 Desktop Llano Lynx ramp

Server

Server Q211 revenue was \$64m. QoQ revenue was down 26% (vs. 5-year average Q2 x86 server seasonal revenue growth of 7.6%). Units (down 13%) and ASP (off 15%) had a comparable adverse impact on quarterly revenue.

- With Mercury Research now including embedded Opteron in their reporting, Q211 combined units suggest that Mercury will report an **approximate 1.1% decrease in AMD Opteron unit share** based on Mercury's forecast of 1.6% Q2 unit growth in x86 server processors.
- **AMD will begin ramping production shipments of its Bulldozer- based AMD Opteron™ 6200 Series** (code-named Interlagos) and AMD Opteron™ 4200 Series (code-named Valencia) in Q3 2011.
- AMD's leadership in High Performance Computing (HPC) was demonstrated again when the bi-annual TOP500 list was unveiled at the June International Supercomputing Conference 2011. Four of the top ten and **twelve of the world's top 25 supercomputers are powered by AMD Opteron processors.**

AMD Embedded Solutions (AES)

AES revenue was \$47M, a decrease of 4% from Q111 (\$49M) and an increase of 4% from Q210 (\$45M).

- Units increased 9% from 3.1Mu in Q111 to 3.4Mu in Q211 while ASPs decreased 12% from \$15.63 to \$13.75. Unit increase was driven primarily by incremental volumes in EPD and GEO partially offset by declining sales in NPD.
- **AES received "Best in Show" honors from VDC Research at the Embedded Systems Conference in San Jose.**
- AES announced availability of new AMD Embedded G-Series APUs with a thermal design power (TDP) envelope as low as 5.5 watts, enabling high-performance, graphics-intensive systems to operate in a fan-less design.

Graphics Processor Group (GPG)

Q211 GPG revenue was \$367M, down 11% from Q111 (\$413M) and down 17% vs. Q210 (\$440M). The Q211 revenue decrease compared to Q111 was primarily related to lower demand in graphics processors due to seasonality for both Channel and Game Console.

- GPU Q211 revenue was \$339m down 11% QoQ and 17% YoY. QoQ revenue decline was driven by Desktop OEM (-16%), AIB (-14%), Mobile (-10% from Q111 the all time high record revenue quarter), and partially offset by increase in Workstation (+4%). YoY revenue decline was mainly driven by Memory (-51%).
- **Workstation Q211 revenue was \$19m, this was an all-time record revenue.** Units also set the all-time record for quarterly shipments with 166Ku in Q211. Quarterly revenue has grown over 40% YoY.
- **Gaming revenue was \$28m** down 17% from Q111 \$34m and down 17% from Q210 \$34m
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

AMD Unit Market Share: Previous Mercury forecast and latest AMD Preliminary Estimate

Last Mercury share estimate was April 25th and latest AMD estimate is based on the Business Unit Team's latest assessment of market share.

- **Desktop:**
 - Mercury forecast was for a 0.5% percentage point growth to 25.9% from q111 25.4%.
 - Preliminary estimate would **suggest a 1.0% percentage growth to 26.4%**, primarily driven by record greater china shipments.
- **Notebook:**
 - Mercury forecast was for a 0.1% percentage point growth to 13.3% from q111 13.2%.
 - Preliminary estimate would **suggest a 0.9% percentage point growth to 13.9%**, primarily driven by Llano recapturing performance notebook share.
- **Server:**
 - Mercury forecast was for a 0.2% percentage point growth to 7.0% from q111 6.8%.
 - Preliminary estimate would **suggest a 1.1% percentage point decline to 5.7%**, primarily driven by share loss in our core OEM traditional IT Market in anticipation of our Q3 Interlagos launch
- **GPU Discrete:**
 - Mercury forecast was for a 7% percentage point decline to 42% from q111 49%.
 - Preliminary estimate would **suggest a lower decline of around 1-2% percentage point decline to 47-48%**, primarily driven by discrete notebook competitive environment.

Revenue - Units – ASP

	Q211	Q111	Q210	2011 YTD	2010 YTD	QOQ	QOQ %	YOY	YOY %	YTD	YTD %
UNITS (M)											
Desktop	11.257	11.133	9.747	22.390	20.555	0.124	1%	1.510	15%	1.836	9%
Notebook	7.722	6.920	6.961	14.642	12.811	0.802	12%	0.761	11%	1.831	14%
Server	0.225	0.257	0.250	0.481	0.601	{0.032}	-12%	{0.025}	-10%	{0.120}	-20%
Total MP	19.204	18.310	17.006	37.514	34.015	0.894	5%	2.198	13%	3.499	10%
Chipsets	15.915	14.148	14.070	30.063	25.629	1.766	12%	1.844	13%	4.434	17%
Total Client	34.894	32.202	30.826	67.095	59.042	2.692	8%	4.068	13%	8.053	14%
Embedded	3.427	3.155	2.445	6.582	4.496	0.272	9%	0.982	40%	2.086	46%
Total CSG	38.545	35.613	33.521	74.158	64.139	2.932	8%	5.024	15%	10.019	16%
AIB/Retail	2.825	3.176	2.373	6.001	5.112	{0.351}	-11%	0.451	19%	0.889	17%
Desktop OEM	3.330	3.334	4.109	6.664	7.751	{0.004}	0%	{0.779}	-19%	{1.087}	-14%
Mobile	9.212	10.457	10.694	19.668	19.456	{1.245}	-12%	{1.482}	-14%	0.212	1%
Workstation	0.166	0.161	0.115	0.327	0.218	0.005	3%	0.051	44%	0.109	50%
Total GPU	15.532	17.128	17.291	32.660	32.536	{1.595}	-9%	{1.759}	-10%	0.124	0%

ASP (\$)											
Desktop	\$ 50.7	\$ 54.1	\$ 53.1	\$ 105	\$ 103	{3.5}	-6%	{2.5}	-5%	1.6	2%
Notebook	\$ 37.5	\$ 35.3	\$ 41.3	\$ 73	\$ 84	2.2	6%	{3.8}	-9%	{11.2}	-13%
Server	\$ 283.9	\$ 334.5	\$ 553.8	\$ 618	\$ 964	{50.6}	-15%	{269.9}	-49%	{345.7}	-36%
Total MP	\$ 48.1	\$ 51.0	\$ 55.6	\$ 99	\$ 111	{2.9}	-6%	{7.5}	-13%	{11.5}	-10%
Chipsets	\$ 14.9	\$ 15.4	\$ 15.7	\$ 30	\$ 31	{0.5}	-3%	{0.8}	-5%	{1.1}	-3%
Total Client	\$ 31.4	\$ 33.1	\$ 33.3	\$ 64	\$ 68	{1.6}	-5%	{1.9}	-6%	{3.3}	-5%
Embedded	\$ 13.8	\$ 15.6	\$ 18.4	\$ 29	\$ 40	{1.9}	-	{4.7}	-25%	{10.7}	-27%
Total CSG	\$ 31.3	\$ 33.7	\$ 36.1	\$ 65	\$ 74	{2.4}	-7%	{4.8}	-13%	{9.0}	-12%
AIB/Retail	\$ 29.9	\$ 30.9	\$ 43.3	\$ 61	\$ 84	{1.0}	-3%	{13.4}	-31%	{23.7}	-28%
Desktop OEM	\$ 13.5	\$ 16.0	\$ 15.0	\$ 29	\$ 29	-	-	{1.6}	-10%	0.0	0%
Mobile	\$ 17.3	\$ 17.0	\$ 15.4	\$ 34	\$ 31	0.3	2%	1.9	12%	2.9	9%
Workstation	\$ 114.4	\$ 113.7	\$ 115.9	\$ 228	\$ 228	0.7	1%	{1.6}	-1%	{0.4}	0%
GPU wo Memory	\$ 19.8	\$ 20.3	\$ 19.8	\$ 40	\$ 41	{0.4}	-2%	0.0	0%	{0.5}	-1%
Total GPU	\$ 21.8	\$ 22.1	\$ 23.5	\$ 44	\$ 48	{0.3}	-1%	{1.7}	-7%	{4.2}	-9%

REVENUE (M)											
Desktop	\$ 570	\$ 603	\$ 518	\$ 1,173	\$ 1,059	{33}	-5%	53	10%	114	11%
Notebook	\$ 290	\$ 244	\$ 289	\$ 534	\$ 540	45	19%	0	0%	{5}	-1%
Server	\$ 64	\$ 86	\$ 138	\$ 150	\$ 283	{22}	-26%	{75}	-54%	{133}	-47%
MP Other	\$ -	\$ -	\$ -	\$ -	\$ -	0	-	0	-	0	-
Total MP	\$ 924	\$ 933	\$ 946	\$ 1,857	\$ 1,881	{9}	-1%	{22}	-2%	{24}	-1%
Chipsets	\$ 236	\$ 217	\$ 220	\$ 454	\$ 401	19	9%	16	7%	53	13%
Total Client	\$ 1,096	\$ 1,065	\$ 1,027	\$ 2,161	\$ 1,999	32	3%	69	7%	162	8%
Embedded	\$ 47	\$ 49	\$ 45	\$ 96	\$ 89	{2}	-4%	2	5%	7	8%
Total CSG	\$ 1,207	\$ 1,200	\$ 1,212	\$ 2,407	\$ 2,372	8	1%	{4}	0%	35	1%
AIB/Retail	\$ 84	\$ 98	\$ 103	\$ 183	\$ 215	{14}	-14%	{18}	-18%	{33}	-15%
Desktop OEM	\$ 45	\$ 53	\$ 62	\$ 98	\$ 114	{8}	-16%	{17}	-27%	{16}	-14%
Mobile	\$ 160	\$ 178	\$ 165	\$ 337	\$ 305	{18}	-10%	{5}	-3%	32	10%
Workstation	\$ 19	\$ 18	\$ 13	\$ 37	\$ 25	1	4%	6	42%	12	50%
Other	\$ 0	\$ 0	\$ 0	\$ 0	\$ 0	0	31%	{0}	-9%	0	11%
Memory	\$ 31	\$ 32	\$ 63	\$ 63	\$ 123	{1}	-2%	{32}	-51%	{60}	-49%
Financial Adj	\$ -	\$ -	\$ -	\$ -	\$ -	0	-	0	-	0	-
Total GPU	\$ 339	\$ 379	\$ 406	\$ 718	\$ 783	{40}	-11%	{67}	-17%	{65}	-8%
Gaming	\$ 28	\$ 34	\$ 34	\$ 62	\$ 66	{6}	-17%	{6}	-17%	{4}	-6%
Total GPG	\$ 367	\$ 413	\$ 440	\$ 780	\$ 849	{46}	-11%	{73}	-17%	{69}	-8%
Handheld	\$ 0	\$ 0	\$ 1	\$ 0	\$ 6	0	0%	{1}	-87%	{6}	-94%
Total AMD	\$ 1,574	\$ 1,613	\$ 1,653	\$ 3,187	\$ 3,227	{38}	-2%	{79}	-5%	{40}	-1%

See additional supporting schedules starting on page 22

Computing Solutions Group

	Q211	Q111	Q210	2011 YTD	2010 YTD	QOQ	QOQ %	YOY	YOY %	YTD	YTD %
UNITS (M)											
Desktop	11.257	11.133	9.747	22.390	20.555	0.124	1%	1.510	15%	1.836	9%
Notebook	7.722	6.920	6.961	14.642	12.811	0.802	12%	0.761	11%	1.831	14%
Server	0.225	0.257	0.250	0.481	0.601	(0.032)	-12%	(0.025)	-10%	(0.120)	-20%
Total MP	19.204	18.310	17.006	37.514	34.015	0.894	5%	2.198	13%	3.499	10%
Chipsets	15.915	14.148	14.070	30.063	25.629	1.766	12%	1.844	13%	4.434	17%
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Embedded	3.427	3.155	2.445	6.582	4.496	0.272	9%	0.982	40%	2.086	46%
Total CSG	38.545	35.613	33.521	74.158	64.139	2.932	8%	5.024	15%	10.019	16%

ASP (\$)											
Desktop	\$ 50.7	\$ 54.1	\$ 53.1	\$ 105	\$ 103	(3.5)	-6%	(2.5)	-5%	1.6	2%
Notebook	\$ 37.5	\$ 35.3	\$ 41.3	\$ 73	\$ 84	2.2	6%	(3.8)	-9%	(11.2)	-13%
Server	\$ 283.9	\$ 334.5	\$ 553.8	\$ 618	\$ 964	(50.6)	-15%	(269.9)	-49%	(345.7)	-36%
Total MP	\$ 48.1	\$ 51.0	\$ 55.6	\$ 99	\$ 111	(2.9)	-6%	(7.5)	-13%	(11.5)	-10%
Chipsets	\$ 14.9	\$ 15.4	\$ 15.7	\$ 30	\$ 31	(0.5)	-3%	(0.8)	-5%	(1.1)	-3%
Total Client	\$ 31.4	\$ 33.1	\$ 33.3	\$ 64	\$ 68	(1.6)	-5%	(1.9)	-6%	(3.3)	-5%
Embedded	\$ 13.8	\$ 15.6	\$ 18.4	\$ 29	\$ 40	(1.9)	-	(4.7)	-25%	(10.7)	-27%
Total CSG	\$ 31.3	\$ 33.7	\$ 36.1	\$ 65	\$ 74	(2.4)	-7%	(4.8)	-13%	(9.0)	-12%

REVENUE (M)											
Desktop	\$ 570	\$ 603	\$ 518	\$ 1,173	\$ 1,059	(33)	-5%	53	10%	114	11%
Notebook	\$ 290	\$ 244	\$ 289	\$ 534	\$ 540	45	19%	0	0%	(5)	-1%
Server	\$ 64	\$ 86	\$ 138	\$ 150	\$ 283	(22)	-26%	(75)	-54%	(133)	-47%
Total MP	\$ 924	\$ 933	\$ 946	\$ 1,857	\$ 1,881	(9)	-1%	(22)	-2%	(24)	-1%
Chipsets	\$ 236	\$ 217	\$ 220	\$ 454	\$ 401	19	9%	16	7%	53	13%
Total Client	\$ 1,096	\$ 1,065	\$ 1,027	\$ 2,161	\$ 1,999	32	3%	69	7%	162	8%
Embedded	\$ 47	\$ 49	\$ 45	\$ 96	\$ 89	(2)	-4%	2	5%	7	8%
Total CSG	\$ 1,207	\$ 1,200	\$ 1,212	\$ 2,407	\$ 2,372	8	1%	(4)	0%	35	1%

Client Fusion APU/Chipsets

Desktop				Q211			Q111			QOQ % Change		
APUs Ontario - Brazos Llano - Lynx Total APU Desktop				Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP
				\$23.8	0.7	\$31.8	\$10.4	0.291	\$35.8	127%	157%	-11%
				\$7.8	0.1	\$110.9	-	0.000	-	-	-	-
				\$31.5	0.8	\$38.5	\$10.4	0.291	\$35.8	202%	181%	7%
										0%	0%	0%
Chipsets Hudson 1 Hudson 2 Total Hudson Chipset				\$9.1	0.708	\$12.8	\$3.2	0.251	\$12.7	186%	182%	1%
				\$29.3	1.566	\$18.7	\$0.0	0.001	\$18.0	325841%	313187%	4%
				\$38.4	2.3	\$16.9	\$3.2	0.252	\$30.7	1105%	804%	-45%
Total Desktop				\$70.0	3.093	\$ 23	\$13.6	0.543	\$ 25	413%	470%	-10%
Total Desktop				Rev (\$M)	Units (M)		Rev (\$M)	Units (M)				
Fusion APU % of Total Desktop				\$570.3	11.257		\$602.9	11.13				
				6%	7%		2%	3%				

Notebook				Q211			Q111			QOQ % Change		
APUs Ontario - Brazos Llano - Sabine Total APU Notebook				Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (K)	ASP
				\$140.1	5.057	\$27.7	\$104.7	3.394	\$30.8	0%	0%	0%
				\$67.6	1.004	\$67.3	\$0.1	0.001	\$78.0	34%	49%	-10%
				\$207.7	6.061	\$34.3	\$104.7	3.395	\$109	78649%	91207%	-14%
										98%	79%	-69%
Chipsets Hudson 1 Hudson 2 Total Hudson Chipset				\$67.2	5.209	\$12.9	\$44.2	3.402	\$13.0	0%	0%	0%
				\$22.4	1.361	\$16.5	\$2.6	0.154	\$16.8	52%	53%	-1%
				\$89.6	6.6	\$13.6	\$46.8	3.555	\$13.2	768%	784%	-2%
										91%	85%	4%
Total Notebook				\$297.3	12.6	\$23.54	\$151.6	6.950	\$ 21.8	184%	180%	1%
Total Notebook				Rev (\$M)	Units (M)		Rev (\$M)	Units (M)				
Fusion APU % of Total Notebook				\$289.7	7.722		\$244.4	6.920				
				72%	78%		43%	49%				

Client				Q211			Q111			QOQ % Change		
Total Client APU Total Client APU Chipset Total Client				Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP
				\$239.2	6.9	\$34.8	\$115.2	3.686	\$31.2	108%	87%	11%
				\$128.0	8.8	\$14.5	\$50.0	3.807	\$13.1	156%	132%	10%
				\$367.3	15.7	\$ 23.4	\$165.2	7.493	\$22.0	122%	110%	6%
Total Client				Rev (\$M)	Units (M)		Rev (\$M)	Units (M)				
Fusion % of Total Client				\$1,096.0	34.894		\$1,064.5	32.202				
				34%	45%		16%	23%				

Desktop

Platform Launches

- AMD shipped the first 70ku Lynx units and 1.5Mu Hudson3 to the Desktop channel in Q211 priming the channel for ramp in Q311.
- The first AM3+ chipsets (900-series) shipped in volume in Q211 in support of the Zambezi Q311 platform launch.

Customer Highlights/Launches

1	[REDACTED]	[REDACTED]	[REDACTED]
2	[REDACTED]	[REDACTED]	[REDACTED]
3	[REDACTED]	[REDACTED]	[REDACTED]
4	[REDACTED]	[REDACTED]	[REDACTED]

- ## Notebook

[illegible]

Chipsets

Financial Overview

Q2 11 Chipset revenue of \$236M was up \$19M (9%) from Q1 11 and up \$16M (7%) compared to Q2 10 (\$220M). Chipset ASP's were slightly down at \$14.86 due to a higher mix of lower end Desktop Chipsets (760G) shipped to [REDACTED] and Channel customers. Chipset Units of 15.9Mu was up 12% from Q111 (14.1Mu) and up 13% from Q210 (14Mu).

Record revenue for Chipsets of \$236M in Q2 11 (last record in Q2 10 - \$220M)

- Overall Desktop Chipsets increased by \$6M/0.3Mu to \$105M/6.9Mu due to increased shipment of Hudson parts [REDACTED] in support of Ontario and Llano.
- Legacy (non-Fusion) Desktop Chipset declined by \$29M/1.7Mu. ASP declined by \$0.73 due to a higher mix of lower end Desktop Chipsets (760G)
- Attach rate for Q2 for Legacy (not Fusion related) Chipsets was 44%, (down 13 points from Q1) due to Nvidia last time buy period in Q2 along with channel customer migration to Fusion Controller Hub in preparation for Q3 volume.
- Fusion Desktop Chipset revenue increased by \$35M/2Mu due to higher shipment [REDACTED] (Hudson 1 for Ontario) and Channel Partners (Hudson 2 for Llano)
- Overall Notebook Chipset increased by \$14M/1.5Mu to \$127M/8.9Mu driven by higher shipments of Hudson in support of Ontario and Llano.
- Legacy (non-Fusion) Notebook Chipset declined by \$29M/1.5Mu (44%/40% respectively) as customers shifted their mix to Fusion.
- Customers [REDACTED] declined in Legacy (not Fusion related) Chipsets but this increase was offset by increases in Fusion Controller Hubs.
- Notebook attach rate remains at 100%.
- Fusion Notebook Chipset increased by \$43M/3Mu Q-O-Q to \$90M/6.6Mu primarily due to shipment of 6Mu Hudson 1 in support of Ontario. There was also \$23M/1.4Mu of Hudson 2 shipped in support of Llano
- In Q1 11, Hudson and Hudson 2 contributed \$128M/8.8Mu to revenue and units (an increase of \$78M/5Mu over Q1 11) as shipments continued to ramp in support of Ontario and Llano. [REDACTED]
- Server Chipset revenue is relatively flat Q-o-Q. [REDACTED]
- Y-o-Y Chipset revenue increased by \$16M with declines in Legacy (non-Fusion) Chipsets being offset with increases in Fusion Controller Hubs. Legacy (non-Fusion) Chipsets decreased by \$112M as customer's transition to Fusion.

Platform/Customer Launches

- Hudson M2/3 sales ramped to 1.4Mu in support of Sabine. AMD shipped 1.5Mu Hudson D3 at an ASP of \$19 in support of the Lynx Desktop channel ramp.
- The 900-series chipsets commenced sales with 300ku shipments in support of the AM3+ (Orochi/Zambezi) Platform

Competitive Outlook

- nVidia is taking last-time-buy orders for MCP61 chipsets. This negatively impacted our legacy chipset sales, 45nm product will continue volume production through 2011 and legacy attach rates are expected to recover in 2H11.

PR Highlights

Client APUs

- Introduced the **AMD A-Series Accelerated Processing Unit (APU)**, combining up to four x86 CPU cores, up to 400 AMD Radeon™ Cores and the parallel compute capabilities of DirectX® 11-capable, discrete-class graphics. Marking the completion of a top-to-bottom APU product stack for 2011, the A-Series will appear in both the 2011 AMD Mainstream Notebook Platform and the 2011 AMD Mainstream Desktop Platform.
 - The 2011 AMD Mainstream Notebook Platform enables a brilliant HD experience with up to 400 gigaflops of processing power and more than 10.5 hours of resting battery life – a 50% increase compared to the 2010 AMD Mainstream Notebook Platform.
 - The AMD A8-3850 and A6-3650 desktop processors are available now from component retailers. The AMD A-Series APUs can deliver up to 120 percent visual performance boost with AMD Dual Graphics and supercomputer-like performance of more than 500 gigaflops compute capacity.

• REDACTED

• REDACTED

• REDACTED

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• REDACTED

Client CPUs

- In May, **AMD added its fastest quad-core processor to the AMD Phenom II desktop processor family**, the AMD Phenom™ II X4 980 Black Edition processor.
- AMD reintroduced the FX brand for PC platforms at the Electronic Entertainment Expo (E3). FX-branded products will signal AMD's top-of-the-stack experience and are geared toward enthusiasts and HD entertainment aficionados.

Server

Financial Overview

- Server Q211 QoQ revenue was down 26% (vs. 5-year average Q2 x86 server seasonal revenue growth of 7.6%). Units (down 12%) and ASP (off 15%) had a comparable adverse impact on quarterly revenue. **NOT TO BE SHARED WITH ANALYSTS:** Excluding "Plan X" sales from each quarter **units would have been down 16%** and ASPs would have been down 12%. Q211 combined units (including embedded Opteron and "Plan X") suggest a **decrease in Opteron unit share (~1.1%) from 6.8% in Q111 to 5.7% in Q211** based on Mercury Research's forecast of 1.6% Q2 unit growth. Quarter-over-quarter declines are exaggerated by Q111 end-of-quarter pull-ins.
- AMD Opteron™ 6100 Series (code-named "Magny-Cours") and 4100 Series (code-named "Lisbon") processor shipments declined 8% over the prior quarter but **now account for over 75% of total AMD server processor shipments**. **NOT TO BE SHARED WITH ANALYSTS:** Excluding "Plan X" sales, combined shipments declined 13% over the prior quarter and account for over 80% of total AMD server processor shipments.
- Server Q211 **YoY revenue decreased 54% with units down 10% while ASPs decreased 49%**. Revenue is down primarily due to share loss in our core OEM traditional IT market. **NOT TO BE SHARED WITH ANALYSTS:** [REDACTED]. Excluding "Plan X" sales units are down 27% and ASPs decline 38%.
- **NOT TO BE SHARED WITH ANALYSTS:** Revenue declines are primarily attributable to inventory drawdowns at key OEMs as customers anticipate the launch of Interlagos.

Q311 Product Launches

- AMD will begin ramping production shipments of its Bulldozer-based AMD Opteron™ 6200 Series (Interlagos) and AMD Opteron™ 4200 Series (Valencia) in Q3 2011. Both Series are upgradeable in the existing G34 / C32 infrastructure with simply a BIOS update. The first major change to the AMD Opteron™ processor core in 8 years, these processors deliver major innovations, including:
- **Flex FP** – the world's only flexible 256 bit FPU. Allows for dedicated 128-bit execution per core or shared 256-bit execution per module.
- **AMD Turbo CORE** – the industry's best all-core boost – up to a 500MHz frequency increase.
- **C6 Power State** - shuts off unused core modules to help reduce idle power at module by up to 95%
- **TDP Power Capping** - sets limits without capping frequency to control power consumption for more flexible, denser deployments.

PR Highlights

- **On the most recent TOP500 list of supercomputers**, the number of AMD Opteron processor-based systems increased 15% compared to the listing from six months ago, with more than half of the AMD systems now featuring AMD's 8- or 12-core processors.
 - The AMD Opteron 6000 Series platform was announced as a key component of Facebook's Open Compute Project, aimed at building highly-efficient, power-optimized datacenters.
 - AMD publicly demonstrated its upcoming 16-core server processor, code-named "Interlagos", which is expected to ship in the third quarter.
- In Q2, three new AMD Opteron processor-based systems aimed at high-performance, compute-intensive workloads came to market from [REDACTED]

Competitive Outlook

- Intel launched their first 32nm “Sandy Bridge” products for 1P servers on April 4th, rebranded as the “E3” Series (formerly Xeon 3000 Series). These 1P CPUs are still based on PCIe Gen2 technology and represent only a modest improvement over their previous generation CPUs. Sandy Bridge-EP, Intel’s mainstream 2P Performance CPU, is expected to launch in mid-Q4’11, while the entry-level 2P Sandy Bridge-EN and the “value 4P” Sandy Bridge-EX CPUs are not expected to launch until Q1’12. Strong rumors now indicate the highly anticipated Sandy Bridge-EP will only support PCIe Gen2 at launch, and it is unclear whether Gen3 support will be added as a mid-life kicker, introduced as an Ivy Bridge feature, or delayed until the next generation platform altogether.
- There are **no competitive product introductions expected for Q3’11**, so Intel’s mainstream 2-way capable, high-volume CPU remains their 32nm, 4- & 6-core Xeon 5600 Series (‘Westmere’). 6-core Westmere competes primarily against 12-core AMD Opteron™ 6100 Series (Magny-Cours), while 4-core Westmere competes primarily against 8-core Magny-Cours. Based on SPECcpu2006, Magny-Cours offers a price/performance advantage over Westmere across the vast majority of the product stack. 60W 6-core and 40W 4-core versions of Westmere represent their primary offering for low-power “Cloud” opportunities and compete primarily against the AMD Opteron™ 4100 Series (Lisbon).
- The **AMD Opteron™ 6100 Series continues to offer competitive performance relative to Intel ‘Westmere’** and is demonstrating value in a number of areas including HPC (FLOPs and memory bandwidth leadership), 2P price/performance for mainstream workloads (IT infrastructure, Web, Collaboration), and 4P price/performance for large memory workloads (Virtualization, Database) by virtue of eliminating the “4P tax”. While competitive on Performance and strong on Price/Performance, Magny-Cours does risk losing deals to Westmere based on concerns of higher power consumption (some real, some perceived).
- The AMD Opteron 4100 Series is targeted at IT infrastructure and Web/Cloud workloads where value and performance per watt are more important than ultimate performance and where Intel offers CPUs with reduced feature-sets and capabilities. The AMD Opteron 4100 Series offers two unique value propositions to 2P server customers:
 - With a starting 1Ku price of \$99, the 4-core, 2P-capable 4100 Series CPU offers tremendous value and scalability for SMB audiences.
 - 4100 Series “EE” processors, with 6-cores and a 32W ACP, can deliver good multi-threaded performance with an unmatched level of power efficiency for large Cloud cluster opportunities.
- In April Intel launched a new family of “Westmere-EX” CPUs, branded their “E7” Series, supporting up to 10-cores/20-threads for 2P, 4P and 8P servers (though with 3rd party chipset support Intel claims 256-way scalability). These new CPUs replace the 8-core “Nehalem-EX” CPUs at the top of Intel’s server CPU offering, and for the first time Intel is saying their Xeon product lineup has overtaken their Itanium lineup from an enterprise capabilities standpoint. As with Nehalem-EX, Westmere-EX is expected to outperform 4P AMD Opteron 6100 Series-based servers on Virtualization and Database benchmarks, though AMD Opteron will still offer considerably better performance per dollar

Customer Highlights

- AMD's leadership in High Performance Computing (HPC) was demonstrated again when the bi-annual TOP500 list was unveiled at the June International Supercomputing Conference 2011. Four of the top ten and twelve of the world's top 25 supercomputers are powered by AMD Opteron processors. More than half of the 68 AMD-based supercomputers on the list now feature the massive compute power offered by the AMD Opteron™ 6000 Series platform. The worldwide HPC market demand for AMD Opteron technology continued unabated through the second quarter with further AMD supercomputing wins:

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1999

Graphics Product Group

	Q211	Q111	Q210	2011 YTD	2010 YTD	QOQ	QOQ %	YOY	YOY %	YTD	YTD %
UNITS (M)											
AIB/Retail	2.825	3.176	2.373	6.001	5.112	{0.351}	-11%	0.451	19%	0.889	17%
Desktop OEM	3.330	3.334	4.109	6.664	7.751	{0.004}	0%	{0.779}	-19%	{1.087}	-14%
Mobile	9.212	10.457	10.694	19.668	19.456	{1.245}	-12%	{1.482}	-14%	0.212	1%
Workstation	0.166	0.161	0.115	0.327	0.218	0.005	3%	0.051	44%	0.109	50%
Total GPU	15.532	17.128	17.291	32.660	32.536	{1.595}	-9%	{1.759}	-10%	0.124	0%

ASP (\$)											
AIB/Retail	\$ 29.9	\$ 30.9	\$ 43.3	\$ 61	\$ 84	{1.0}	-3%	{13.4}	-31%	{23.7}	-28%
Desktop OEM	\$ 13.5	\$ 16.0	\$ 15.0	\$ 29	\$ 29	-	-	{1.6}	-10%	0.0	0%
Mobile	\$ 17.3	\$ 17.0	\$ 15.4	\$ 34	\$ 31	0.3	2%	1.9	12%	2.9	9%
Workstation	\$ 114.4	\$ 113.7	\$ 115.9	\$ 228	\$ 228	0.7	1%	{1.6}	-1%	{0.4}	0%
GPU wo Memory	\$ 19.8	\$ 20.3	\$ 19.8	\$ 40	\$ 41	{0.4}	-2%	0.0	0%	{0.5}	-1%
Total GPU	\$ 21.8	\$ 22.1	\$ 23.5	\$ 44	\$ 48	{0.3}	-1%	{1.7}	-7%	{4.2}	-9%

REVENUE (M)											
AIB/Retail	\$ 84	\$ 98	\$ 103	\$ 183	\$ 215	{14}	-14%	{18}	-18%	{33}	-15%
Desktop OEM	\$ 45	\$ 53	\$ 62	\$ 98	\$ 114	{8}	-16%	{17}	-27%	{16}	-14%
Mobile	\$ 160	\$ 178	\$ 165	\$ 337	\$ 305	{18}	-10%	{5}	-3%	32	10%
Workstation	\$ 19	\$ 18	\$ 13	\$ 37	\$ 25	1	4%	6	42%	12	50%
Memory	\$ 31	\$ 32	\$ 63	\$ 63	\$ 123	{1}	-2%	{32}	-51%	{60}	-49%
Total GPU	\$ 339	\$ 379	\$ 406	\$ 718	\$ 783	{40}	-11%	{67}	-17%	{65}	-8%
Gaming	\$ 28	\$ 34	\$ 34	\$ 62	\$ 66	{6}	-17%	{6}	-17%	{4}	-6%
Total GPG	\$ 367	\$ 413	\$ 440	\$ 780	\$ 849	{46}	-11%	{73}	-17%	{69}	-8%

Financial Overview

- GPG Q211 was \$367M down 11% QoQ from \$413M in Q111 and down 17% YoY . QoQ revenue decrease was primarily related to lower demand in graphic processors and game consoles due to seasonality.
- GPU revenue was down 17% YoY. The decrease was driven by lower revenue in AIB (-18%), Desktop OEM (-27%), Mobile (-3%) and Memory (-51%) but partially offset by increase in Workstation (42%).
- GPU revenue decreased 11% to \$339M from \$379M in Q111.
 - AIB revenue decreased \$14M or 14% due to seasonality.
 - [REDACTED]
 - [REDACTED]
 - Desktop OEM revenue was down \$8M and Memory was down \$1M.
- GPU ASP was down \$0.3 (or 1%) QoQ, primarily driven by product mix.
- Gaming revenue was down 17% QoQ from \$34M to \$28M, driven by lower game consoles sales due to seasonality.
- Estimated total Discrete GPU market share to be lower (~42%) from 49% in Q111 reported by Mercury in April 2011. Mercury estimated TAM for Q211 is 36.2M (17.6M Desktop and 18.6M Notebook). We believe actual Q211 TAM will be lower than Mercury's estimate.

PR Highlights

- [REDACTED]
- During the AMD Fusion Developer Summit, AMD unveiled the advanced compute characteristics of the next generation graphics core, emphasizing the tremendous compute capabilities and benefits of heterogeneous computing using AMD CPU, AMD APU and AMD discrete graphics technologies.
- AMD raised the bar on sub-\$100 graphics performance and image quality with the introduction of the AMD Radeon™ HD 6670, HD 6570 and HD 6450 discrete graphics cards, completing the roll-out of the AMD Radeon™ HD 6000 family. These products provide exceptional DirectX 11 game experience, AMD App acceleration and AMD Eyefinity multi-display technology in low-power, low-profile, low-cost graphics boards
- AMD launched the AMD FirePro™ V5900 and FirePro™ V7900 pro graphics cards with AMD Eyefinity, providing engineers and designers with an expansive desktop space from which to see more data, open more applications and view more information at the same time; improving workflow and enabling increased productivity.
- Delivering ultra-fast performance, superb visual quality and massively parallel processing power, **AMD introduced AMD FirePro™ V7800P professional graphics designed to help IT minimize operating costs and time spent on servicing individual systems, increase asset utilization density and secure critical data.**
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Discrete Graphics Competitive Outlook

- The latest rumor on the web suggests Nvidia's next generation discrete GPU (codename: Kepler) has been delayed and will now launch in 1H 2012. Initially, Nvidia communicated back in October 2010 at their GPU Technology Conference that the Kepler architecture would ship at the end of 2011. However, they are targeting to launch a 28nm value segment discrete GPU before the end of 2011. This 28nm product is based on the current shipping architecture (not Kepler).
- Late Q2, Nvidia launched their enthusiast class notebook GPU (Geforce GTX580M) claiming to be the world's fastest notebook GPU. Based on industry benchmarks, the July launch of the Radeon HD 6990M will seize the performance crown away from the Geforce GTX 580M in the notebook space. In addition to GTX 580M, Nvidia released new product derivatives for desktop and notebook markets during Q2 to fill the gaps in their existing product stack.

AIB / Retail

- Overall, AIB Revenue is at \$84M which represents a decrease of \$14M (or 14%) QoQ. Volume remains relatively flat at 2.8mu with ASP drop to \$30. The decline is almost entirely due to seasonality.
- YoY AIB revenue decreased by \$18M (or 18%). This is mainly due to AIB Consumption reserve release of \$10.7M in Q2 10 and lower ASP in Q211.
- AIB is ready for market recovery in Q3 11, with new products and demand generation programs in place.
- Channel inventory on high-end products is healthier/lower than Q1 11 end.

Memory

- Memory revenue QoQ is slightly down by \$1M (or 2%) mainly due to lower ASP in the market (slow PC demand / oversupply), with quantity up by 500ku (or 5%).
- YoY memory revenue decreased by \$32M (or 51%) due to AMD branded DDR2 EOL, slow ramp of DDR3 in Q211, and lower ASP as a result of market downturn. [For internal discussion only: Samsung litigation has resulted in supply constraint on non ATI-branded memory for AMD. YoY impact is ~ \$24M]

Desktop OEM

- Q2 11 Desktop OEM revenue is down \$8.5M (or 16%) with quantity flat QoQ. [REDACTED]
- Unit volume is relatively flat to Q1 11 but revenue declined because of the product mix being skewed towards value segment.
- Server Demand (RN50) has dropped 270Ku QoQ. This decline has been compensated by seasonal increases in value segment volumes.
- YoY revenue decreased \$17M (or 27%) due to market size reduction and slow demand for NI Performance and Enthusiast products.

(NOT TO BE SHARED WITH ANALYSTS)

[REDACTED]					
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	1	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

Mobile Discrete

- Q211 mobile revenue is down \$18M (or 10%) QoQ. [REDACTED]
- [REDACTED] This resulted in historically high Q1 results. Q211 was predicted to be lower than Q111.
- [REDACTED]
- Q211 mobile revenue is down \$5M (or 3%) YoY, [REDACTED]
- [REDACTED]

(NOT TO BE SHARED WITH ANALYSTS)

[REDACTED]					
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	\$	[REDACTED]	[REDACTED]

Workstation

Professional Graphics started out 2011 strong, with year on year growth for the first half close to 50%. This continued growth is a result of the self-funding model and increased investment in sales, pre-sales engineering and ISV engineering.

- [REDACTED]
- Quarter on Quarter revenue growth was 4% [REDACTED]

Game Console

- [REDACTED]
[REDACTED]
- [REDACTED]
[REDACTED]
- [REDACTED]
[REDACTED]
- [REDACTED]
[REDACTED]

Revenue by Region

AMD Revenue by Region

	Q2-11			Q1-11			Q2-10			QOQ % Change			YOY % Change		
	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (K)	ASP	Rev (\$M)	Units (K)	ASP
North America	\$87	3.142	\$26.4	\$106	2.703	\$37.6	\$168	2.444	\$68.6	-18%	16%	-30%	-48%	29%	-62%
EM - Latin America	\$69	1.624	\$42.5	\$62	1.460	\$42.1	\$65	1.026	\$63.2	12%	11%	1%	7%	58%	-33%
Europe	\$123	2.982	\$41.2	\$161	3.528	\$45.5	\$197	3.886	\$50.8	-23%	-15%	-9%	-38%	-23%	-19%
EM - EE	\$57	0.861	\$66.8	\$81	1.043	\$77.7	\$42	0.626	\$67.7	-29%	-17%	-14%	36%	37%	-1%
EM - MEA	\$2	0.065	\$29.9	\$2	0.057	\$42.1	\$1	0.015	\$68.9	-19%	13%	-29%	83%	320%	-57%
South Asia	\$281	13.103	\$21.3	\$279	12.751	\$21.8	\$237	12.035	\$19.7	0%	3%	-2%	18%	9%	8%
EM - India	\$9	0.168	\$51.0	\$9	0.166	\$55.1	\$8	0.185	\$44.4	-6%	1%	-7%	4%	-9%	15%
EM - China	\$808	27.905	\$28.4	\$782	27.436	\$27.9	\$750	24.636	\$30.5	3%	2%	2%	8%	13%	-7%
Japan	\$131	4.118	\$26.6	\$113	3.486	\$26.2	\$168	5.871	\$28.6	16%	18%	2%	-22%	-30%	-7%
Korea	\$7	0.110	\$64.0	\$18	0.211	\$84.8	\$15	0.234	\$65.2	-61%	-48%	-25%	-54%	-53%	-2%
Total	\$1,574	54.078	\$26.0	\$1,613	52.842	\$29.3	\$1,653	50.960	\$30.8	-2%	2%	-4%	-5%	6%	8%

MP Revenue by Region

OEM only	Q2-11			Q1-11			Q2-10			QOQ % Change			YOY % Change		
	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (K)	ASP	Rev (\$M)	Units (K)	ASP
North America	\$35	0.466	\$74.7	\$46	0.619	\$74.5	\$105	1.316	\$79.7	-24%	-25%	0%	-67%	-65%	-6%
EM - Latin America	\$25	0.267	\$94.6	\$19	0.197	\$97.8	\$36	0.163	\$221.8	31%	35%	-3%	-30%	63%	-57%
Europe	\$53	1.413	\$37.8	\$72	1.711	\$41.9	\$128	2.333	\$55.0	-26%	-17%	-10%	-58%	-39%	-31%
EM - EE	\$8	0.048	\$176.2	\$16	0.067	\$235.1	\$4	0.044	\$94.6	-46%	-28%	-25%	101%	8%	86%
EM - MEA	\$1	0.050	\$16.5	\$1	0.040	\$25.0	\$0	0.000	\$0.0	-18%	24%	-34%	-8278%	0%	0%
South Asia	\$71	1.394	\$50.6	\$83	1.606	\$51.9	\$41	0.726	\$56.6	-15%	-13%	-2%	72%	92%	-11%
EM - India	\$2	0.030	\$50.5	\$3	0.057	\$57.1	\$2	0.037	\$53.1	-53%	-47%	-12%	-22%	-18%	-5%
EM - China	\$241	6.037	\$39.9	\$205	5.521	\$37.1	\$220	5.185	\$42.5	17%	9%	7%	9%	16%	-6%
Japan	\$67	1.711	\$39.1	\$44	1.102	\$40.0	\$73	1.755	\$41.7	52%	55%	-2%	-9%	-2%	-6%
Korea	\$0	0.008	\$51.9	\$1	0.022	\$56.9	\$0	0.015	\$28.6	-67%	-64%	-9%	-1%	-45%	81%
Total	\$503	11.422	\$44.0	\$490	10.942	\$44.8	\$610	11.574	\$52.7	2%	4%	-2%	-18%	-1%	-17%

Disti only	Q2-11			Q1-11			Q2-10			QOQ % Change			YOY % Change		
	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (K)	ASP	Rev (\$M)	Units (K)	ASP
North America	\$59	0.869	\$68.2	\$57	0.615	\$92.1	\$48	0.586	\$81.7	5%	41%	-26%	24%	48%	-17%
EM - Latin America	\$31	0.570	\$54.6	\$33	0.601	\$54.2	\$22	0.454	\$47.9	-4%	-5%	1%	43%	25%	14%
Europe	\$55	0.980	\$56.3	\$74	1.207	\$61.2	\$56	0.929	\$59.8	-25%	-19%	-8%	-1%	5%	-6%
EM - EE	\$46	0.782	\$59.0	\$58	0.924	\$63.3	\$35	0.554	\$63.6	-21%	-15%	-7%	31%	41%	-7%
EM - MEA	\$1	0.016	\$72.8	\$1	0.018	\$81.0	\$1	0.015	\$69.6	-20%	-11%	-10%	5%	0%	5%
South Asia	\$28	0.512	\$54.9	\$26	0.455	\$57.0	\$23	0.364	\$63.4	8%	13%	-4%	22%	41%	-13%
EM - India	\$7	0.137	\$51.0	\$6	0.108	\$53.8	\$6	0.145	\$42.8	20%	27%	-5%	13%	-5%	19%
EM - China	\$183	3.786	\$48.3	\$166	3.214	\$51.8	\$127	2.160	\$58.6	10%	18%	-7%	44%	75%	-18%
Japan	\$4	0.033	\$112.5	\$5	0.040	\$119.5	\$5	0.038	\$135.6	-23%	-19%	-6%	-29%	-15%	-17%
Korea	\$7	0.068	\$98.0	\$17	0.187	\$89.2	\$13	0.138	\$91.3	-60%	-48%	-23%	-47%	-29%	-24%
Total	\$421	7.781	\$54.1	\$443	7.368	\$60.1	\$335	5.384	\$62.3	-5%	6%	-10%	26%	45%	-13%

Total MPU	Q2-11			Q1-11			Q2-10			QOQ % Change			YOY % Change		
	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (K)	ASP	Rev (\$M)	Units (K)	ASP
North America	\$94	1.335	\$70.5	\$103	1.235	\$83.3	\$153	1.902	\$80.3	-8%	8%	-15%	-38%	-30%	-12%
EM - Latin America	\$56	0.837	\$67.3	\$52	0.798	\$65.0	\$58	0.618	\$94.0	9%	5%	4%	-3%	35%	-28%
Europe	\$108	2.993	\$45.3	\$146	2.917	\$49.9	\$184	3.262	\$56.3	-25%	-18%	-9%	-41%	-27%	-20%
EM - EE	\$55	0.829	\$65.7	\$74	0.991	\$74.8	\$39	0.568	\$65.9	-26%	-16%	-12%	38%	39%	0%
EM - MEA	\$2	0.065	\$29.9	\$2	0.057	\$42.1	\$1	0.015	\$68.9	-19%	13%	-29%	83%	320%	-57%
South Asia	\$99	1.906	\$51.8	\$109	2.060	\$53.0	\$64	1.090	\$58.9	-10%	-7%	-2%	54%	75%	-12%
EM - India	\$9	0.167	\$50.9	\$9	0.165	\$54.9	\$8	0.182	\$44.9	-6%	1%	-7%	5%	-8%	13%
EM - China	\$424	9.823	\$43.1	\$371	8.735	\$42.5	\$347	7.344	\$47.2	14%	12%	1%	22%	34%	-9%
Japan	\$71	1.744	\$40.5	\$49	1.143	\$42.8	\$78	1.793	\$43.7	44%	53%	-5%	-10%	-3%	-7%
Korea	\$7	0.106	\$67.7	\$18	0.209	\$85.7	\$13	0.153	\$85.2	-60%	-49%	-21%	-45%	-31%	-21%
Total	\$924	19.204	\$48.1	\$933	18.310	\$51.0	\$946	16.958	\$55.8	-1%	5%	-6%	-2%	13%	-14%

GPU Revenue by Region (excludes gaming)

	Q2-11			Q1-11			Q2-10			QOQ % Change			YOY % Change		
	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (K)	ASP	Rev (\$M)	Units (K)	ASP
North America	\$27	0.070	\$384.6	\$17.3	0.086	\$204.2	\$2	0.125	\$18.2	53%	-19%	88%	1065%	-45%	2017%
EM - Latin America	\$1	0.068	\$17.9	\$0.7	0.058	\$12.9	\$1	0.026	\$28.5	61%	16%	38%	65%	164%	-37%
Europe	\$5	0.038	\$133.3	\$4.1	0.038	\$102.1	\$6	0.095	\$64.2	27%	-1%	31%	-14%	-60%	108%
EM - EE	\$3	0.032	\$94.4	\$6.9	0.052	\$133.5	\$3	0.026	\$113.7	-57%	-39%	-28%	1%	22%	-17%
EM - MEA	\$0	0.000	\$0.0	\$0.0	0.000	\$0.0	\$0	0.000	\$0.0	0%	0%	0%	0%	0%	0%
South Asia	\$106	6.243	\$16.8	\$92.2	5.645	\$16.1	\$95	6.074	\$15.7	15%	11%	4%	11%	3%	7%
EM - India	\$0	0.000	\$66.6	\$0.1	0.001	\$69.4	\$0	0.000	\$138.7	-68%	-56%	-26%	-33%	40%	-52%
EM - China	\$237	8.332	\$26.6	\$274.2	10.096	\$25.6	\$280	9.122	\$30.7	-14%	-17%	4%	-16%	-9%	-14%
Japan	\$13	0.748	\$18.0	\$18.2	1.153	\$15.7	\$23	1.823	\$12.8	-26%	-35%	15%	-42%	-58%	41%
Korea	\$0	0.003	\$43.5	\$0.0	0.000	\$1,945.7	\$0	0.000	\$0.0	168%	11900%	-98%	-11484%	0%	0%
Total	\$339	15.532	\$19.8	\$379.0	17.128	\$20.3	\$407	17.292	\$19.8	-11%	-8%	-2%	-17%	-10%	0%

[REDACTED]

[REDACTED]

[REDACTED]

[REDACTED]

By [REDACTED] (M)



Manufacturing and Inventory

(DATA NOT FOR PUBLIC DISCLOSURE)

GLOBALFOUNDRIES – MP

AMD Wafer Starts* (estimated for Q211)

Total production starts in Q211 increased 29% compared to Q111 to meet requirements for 32nm ramp in Q311. 45nm decreased by 14% compared to Q111, in line with 32nm ramping up.

	Q211	Q111	Q410	Q310	Q210	Q109	Q409	Q309	Q209
65nm				750	750	1,450	9,775	14,487	17,275
45nm	18,868	21,842	43,464	67,151	67,176	58,569	42,668	38,752	27,434
32nm	72,603	49,231	7,661	2,912	2,200	621	581	24	-
Total	91,471	71,073	51,125	70,813	70,126	60,640	53,024	53,263	44,709

*Wafer starts (inc. PEO, excl. Process Development)

AMD Wafer Outs*

Q211 wafer shipments decreased by 20% compared to Q111, longer cycle times within the factory and the shipment of 5700 45nm wafers in Q111 that were built ahead in Q410 in preparation of the 2011 ramp of 32nm

	Q211	Q111	Q410	Q310	Q210	Q109	Q409	Q309	Q209
65nm				450	1293	2,115	17,921	13,768	12,284
45nm	17,137	44,002	41,585	52,583	55,586	48,578	37,952	30,326	18,262
32nm	21,459	4,558	2,501	810	539	130	-	2	-
Total	38,596	48,560	44,086	53,843	57,418	50,823	55,873	44,096	30,546

* Wafer Outs reported from Q109 on, after GLOBALFOUNDRIES spinoff

Other Q211 Highlights

Fab PROD expenses decreased by 37.2% compared to Q111 mainly driven by two factors: change in mix from more expensive 45nm wafers to 32nm wafers and lower total volumes.

Future

Demand outlook shows a significant increase in volume over the next quarter as the ramp of 32nm deliveries continues. This is highlighted in the increased starts in Q211.

FAB Production Volume/Spend/Utilization

Wafer Volume Ku PROD Only	Act Q211	Act Q111	Act 2010	Act Q410	Act Q310	Act Q210	Act Q110	Act 2009
Starts	91.5	70.5	245.4	49.5	67.9	67.9	60.1	175.7
Outs	38.6	48.6	202.4	42.3	53	56.7	50.4	170.5
Equiv	65.0	59.6	223.9	45.9	60.5	62.3	55.3	173.1

Spend \$'M	\$ 145	\$ 231	\$ 1,198	\$ 286	\$ 297	\$ 299	\$ 317	\$ 1,129
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Fab Utilization	Act Q211	Act Q111	Act 2010	Act Q410	Act Q310	Act Q210	Act Q110	Act 2009
Available	96%	88%	83%	68%	89%	92%	82%	64%
Installed	85%	78%	73%	60%	79%	81%	72%	56%

Fab capacity "Available"	67.6	5.2	Constrained by people and equipment in " sleep" mode					
Fab capacity "Installed"	76.7	5.9	Fully staffed and equipment on and available					

Note: Capacity confirmed by GF during v210 forecast cycle





Ending on Hand Inventory by Products and Technology

Q211 MP Product Detail (Gross)

Type	\$(M)	Units(M)
Other	\$2	238
Rev G	\$9	690
Deerhound	\$1	43
Lion	\$1	40
Others	\$13	1,011
Ridgeback	\$30	898
Bloodhound	\$18	858
Dachshund	\$65	4,394
Hydra	\$41	715
Pharaoh	\$45	1,077
Ontario	\$40	5,416
Llano1 prime	\$18	290
Llano1 non prime	\$30	1,872
Trinity	\$0	-
Orochi	\$2	56
Total	\$301	16,587

Q211 GPU Product Detail (Gross)

Type	\$(M)	Units(M)
Turks	\$75	6,158
Barts	\$52	1,686
Caicos	\$56	8,421
Cayman	\$21	264
Cypress	\$4	62
Juniper	\$13	568
Redwood	\$4	249
Cedar	\$15	2,316
RV7xx	\$10	551
RV6xx	\$5	472
Memory	\$2	791
Other GPG	\$6	1,834
Total	\$262	23,372

MP Gross Inventory by Technology

	Q211		Q111		Q410		Q310		Q210	
	\$(M)	Units (M)	\$(M)	Units (M)	\$(M)	Units (M)	\$(M)	Units (M)	\$(M)	Units (M)
90nm	\$2	0.238	\$3	0.117	\$9	0.469	\$11	0.567	\$10	0.591
65nm	\$11	0.772	\$14	0.957	\$16	1.210	\$25	1.828	\$40	2.829
45nm	\$199	7.942	\$330	16.401	\$370	17.186	\$380	19.169	\$359	19.132
40nm	\$40	5.416	\$32	4.479	\$6	0.828	\$0	0.000	\$0	-
32nm	\$49	2.218	\$8	0.572	\$2	0.041	\$0	-	\$0	-
Total	\$301	16.587	\$387	22.526	\$404	19.733	\$417	21.564	\$409	22.552

GPU Gross Inventory by Technology

	Q211		Q111		Q410		Q310		Q210	
	\$(M)	Units (M)	\$(M)	Units (M)	\$(M)	Units (M)	\$(M)	Units (M)	\$(M)	Units (M)
40nm	\$240	19.724	\$186	13.484	\$168	12.633	\$137	12.245	\$90	6.479
55nm	\$10	0.551	\$14	0.981	\$22	1.985	\$32	2.985	\$42	3.985
65nm	\$5	0.472	\$8	0.897	\$10	1.291	\$15	0.922	\$17	1.263
Others	\$7	2.625	\$14	2.884	\$10	1.294	\$24	4.176	\$26	4.530
Total	\$262	23.372	\$222	18.247	\$209	17.204	\$208	20.328	\$175	16.257

Seasonality and Market Share

Source: Mercury – Apr 2011

Q1 2003 to Q4 2010

MPU – Seasonality

	Q1	Q2	Q3	Q4
Min	-15%	-10%	2%	-18%
Average	-6%	3%	10%	6%
Max	1%	14%	18%	13%

Source: Mercury - Apr, 2011

GPU Seasonality

Desktop	Q1	Q2	Q3	Q4
Min	-10%	-23%	2%	-31%
Average	-3%	-9%	12%	3%
Max	7%	9%	21%	19%

Source: Mercury - Apr, 2011

Chipset – Seasonality

	Q1	Q2	Q3	Q4
Max	-16%	-9%	-2%	-38%
Min	-4%	3%	16%	0%
Average	13%	37%	25%	22%

Source: Mercury - Apr, 2011

GPU Seasonality

Mobile	Q1	Q2	Q3	Q4
Min	-23%	-11%	-23%	-36%
Average	-4%	7%	13%	6%
Max	26%	40%	50%	29%

Source: Mercury - Apr, 2011

	Units										ASP										SM																			
	2q08	3q08	4q08	1q09	2q09	3q09	4q09	1q10	2q10	3q10	4q10	1q11	2q11	2q08	3q08	4q08	1q09	2q09	3q09	4q09	1q10	2q10	3q10	4q10	1q11	2q11	2q08	3q08	4q08	1q09	2q09	3q09	4q09	1q10	2q10	3q10	4q10	1q11	2q11	
AMD																																								
Desktop	0,164	0,822	8,892	9,772	0,180	0,753	1,062	0,810	1,019	0,982	1,061	1,050	0,046	52	50	50	49	48	49	50	50	51	52	49	53	54	56	544	543	440	482	490	598	593	531	540	575	598	593	
Mobile	4,269	4,976	3,653	4,450	4,250	5,447	6,478	5,852	7,086	7,110	7,006	7,022	7,266	63	62	53	51	42	41	38	42	43	44	42	37	40	298	298	310	245	225	247	243	302	312	293	260	263		
Server	535	510	312	275	285	308	370	389	274	275	298	288	300	296	348	433	429	379	381	393	387	511	536	48	379	348	555	60	97	105	118	108	117	146	60	109	120	109	104	
	6,228	6,308	12,857	14,467	4,726	6,533	8,330	7,551	7,559	8,347	8,355	8,360	8,342	63	63	60	57	53	53	53	53	56	55	54	54	53	54	581	1,031	768	824	778	868	983	947	972	982	988	987	986
Intel																																								
Desktop	28,353	32,448	26,376	24,701	28,029	30,048	31,034	29,714	30,947	31,307	31,205	31,607	29,770	88	80	94	88	85	83	87	84	82	85	86	90	89	2,591	2,593	2,467	2,166	2,203	2,507	2,737	2,469	2,534	2,669	2,695	2,672	2,637	
Mobile	28,747	38,969	33,119	27,634	34,781	42,409	47,033	43,607	45,382	45,983	45,725	46,25	47,584	92	87	78	81	73	67	71	82	84	84	85	90	90	2,733	3,377	2,580	2,169	2,551	2,853	3,336	3,554	3,794	3,883	3,892	4,162	4,282	
Server	3,579	3,197	2,418	2,290	2,555	2,964	3,417	3,222	3,627	3,765	4,085	3,931	3,986	412	448	470	459	461	488	529	510	523	522	559	558	555	1,475	1,432	1,108	1,052	1,177	1,446	1,818	1,643	1,866	1,984	2,282	2,164	2,216	
	62,619	74,634	61,910	54,465	63,365	75,421	81,754	76,543	79,956	81,036	81,036	81,663	81,940	108	99	100	100	94	90	96	101	103	105	109	110	112	6,799	7,403	6,831	5,417	5,931	6,856	7,891	7,656	8,225	8,515	8,869	9,218	9,402	
AMD Share	93%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	97%	93%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	92%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	93%	
Intel Share	79%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	82%	
	987%	985%	985%	985%	985%	985%	985%	985%	985%	985%	985%	985%	985%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	987%	
AMD																																								
Desktop	6,228	6,308	12,857	14,467	4,726	6,533	8,330	7,551	7,559	8,347	8,355	8,360	8,342	63	63	60	57	53	53	53	53	56	55	54	54	53	54	581	1,031	768	824	778	868	983	947	972	982	988	987	986
Intel	62,619	74,634	61,910	54,465	63,365	75,421	81,754	76,543	79,956	81,036	81,036	81,663	81,940	108	99	100	100	94	90	96	101	103	105	109	110	112	6,799	7,403	6,831	5,417	5,931	6,856	7,891	7,656	8,225	8,515	8,869	9,218	9,402	
Via	1,035	1,020	709	582	672	667	691	681	845	795	888	880	851	22	23	23	23	22	22	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23	23
	78,942	91,662	75,409	69,224	78,762	92,596	103,665	94,275	98,340	101,077	101,038	101,038	101,038	99	92	92	90	85	83	88	92	94	95	99	101	101	7,780	8,457	6,888	6,255	6,723	7,659	8,877	8,658	9,218	9,525	9,878	10,228	10,578	10,828
Total																																								
Desktop	40,337	43,782	35,643	34,830	36,707	41,397	43,622	41,164	41,666	42,844	42,716	43,582	41,169	78	72	82	76	74	74	77	74	74	75	77	80	79	3,551	3,468	2,597	2,556	2,703	3,048	3,340	3,066	3,081	3,222	3,294	3,487	3,646	3,816
Mobile	34,321	44,473	37,066	31,609	36,216	47,927	53,546	49,500	52,573	53,293	52,949	53,502	55,008	88	83	75	76	70	64	67	77	78	79	79	83	83	3,007	3,659	2,780	2,428	2,735	3,077	3,584	3,798	4,088	4,200	4,401	4,588	4,785	
Server	4,094	3,707	2,730	2,595	2,840	3,272	3,787	3,611	3,901	4,040	4,373	4,278	4,286	398	434	465	456	453	478	516	496	522	521	549	546	541	1,624	1,610	1,271	1,170	1,285	1,593	1,953	1,793	2,036	2,103	2,403	2,503	2,517	
	78,942	91,662	75,409	69,224	78,762	92,596	103,665	94,275	98,340	101,077	101,038	101,038	101,038	99	92	92	90	85	83	88	92	94	95	99	101	101	7,780	8,457	6,888	6,255	6,723	7,659	8,877	8,658	9,218	9,525	9,878	10,228	10,578	10,828
AMD Share																																								
D	25.8%	24.7%	24.7%	24.1%	26.1%	27.8%	28.0%	26.7%	26.3%	24.3%	25.4%	25.4%	25.9%	25.8%	24.7%	24.7%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	24.1%	
M	24%	12%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	
S	24%	12%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	10%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	24%	
TU	9.5%	9.7%	9.7%	9.5%	10.2%	10.7%	10.6%	10.2%	10.1%	9.8%	9.8%	9.8%	9.8%	9.5%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	9.2%	

CSG Trend by Division

		Q208	Q308	Q408	Q109	Q209	Q309	Q409	Q110	Q210	Q310	Q410	Q111	Q211
CSG	Units Mu	25.203	27.717	20.255	22.432	25.149	29.789	34.330	30.618	33.473	31.904	35.379	35.613	38.545
	ASP	\$44	\$50	\$43	\$42	\$37	\$36	\$36	\$38	\$36	\$38	\$34	\$34	\$31
	Revenue	\$1,112	\$1,398	\$879	\$942	\$925	\$1,082	\$1,220	\$1,160	\$1,212	\$1,226	\$1,219	\$1,200	\$1,207
Q/Q %		-8%	26%	-37%	7%	-2%	17%	13%	-5%	4%	6%	5%	3%	0%
Y/Y%		0%	8%	-38%	-22%	-17%	-23%	39%	23%	31%	33%	32%	30%	12%
MPU	Units Mu	15.184	16.275	12.811	14.598	14.772	16.460	18.505	17.009	16.958	18.462	18.078	18.310	19.204
	ASP	\$63	\$63	\$60	\$56	\$51	\$53	\$54	\$55	\$56	\$55	\$53	\$51	\$48
	Revenue	\$953	\$1,023	\$763	\$820	\$751	\$868	\$981	\$935	\$946	\$1,013	\$955	\$933	\$924
Q/Q %		-9%	7%	-25%	7%	-8%	15%	13%	-5%	1%	8%	2%	0%	-2%
Y/Y%		0%	-9%	-39%	-21%	-21%	-15%	29%	14%	26%	35%	27%	24%	6%
Desktop	Units Mu	10.416	10.794	9.246	9.862	10.236	10.695	11.667	10.808	9.747	10.913	10.842	11.133	11.257
	ASP	\$50	\$50	\$48	\$49	\$46	\$50	\$50	\$50	\$53	\$50	\$53	\$54	\$51
	Revenue	\$526	\$542	\$443	\$479	\$473	\$532	\$584	\$541	\$518	\$551	\$576	\$603	\$570
Q/Q %		-11%	3%	-18%	8%	-1%	12%	10%	-7%	-4%	2%	6%	11%	10%
Y/Y%		0%	-11%	-37%	-19%	-10%	-2%	32%	13%	9%	16%	22%	27%	7%
Notebook	Units Mu	4.265	4.972	3.254	4.465	4.248	5.458	6.467	5.850	6.961	7.302	6.987	6.920	7.722
	ASP	\$62	\$61	\$58	\$51	\$41	\$40	\$41	\$43	\$42	\$45	\$39	\$35	\$38
	Revenue	\$265	\$305	\$187	\$226	\$174	\$217	\$264	\$250	\$289	\$325	\$269	\$244	\$290
Q/Q %		-10%	15%	-39%	20%	-23%	24%	22%	-5%	16%	23%	2%	-8%	16%
Y/Y%		4%	-17%	-50%	-23%	-34%	-29%	41%	11%	66%	87%	55%	40%	34%
Server	Units Mu	0.503	0.509	0.312	0.271	0.289	0.307	0.370	0.351	0.250	0.246	0.248	0.257	0.225
	ASP	\$320	\$345	\$426	\$424	\$361	\$389	\$396	\$410	\$554	\$557	\$443	\$335	\$284
	Revenue	\$161	\$176	\$133	\$115	\$104	\$119	\$147	\$144	\$138	\$137	\$110	\$86	\$64
Q/Q %		3%	9%	-24%	-13%	-9%	14%	23%	-2%	-4%	-7%	-25%	-42%	-56%
Y/Y%		-1%	13%	-21%	-27%	-35%	-32%	10%	25%	33%	31%	5%	-18%	-47%
MPU Other	Units Mu													
	ASP													
	Revenue	\$0	\$191	\$0	\$0	\$0	\$0	-\$14	\$0	\$0	\$0	\$0	\$0	\$0
Q/Q %		0%	0%	-100%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
Y/Y%		0%	0%	-100%	0%	0%	-100%	0%	0%	0%	0%	0%	0%	0%
Embedded	Units Mu	3.123	3.005	2.268	1.830	2.024	2.248	2.784	2.051	2.445	2.540	3.267	3.155	3.427
	ASP	\$17	\$18	\$17	\$18	\$23	\$22	\$16	\$22	\$18	\$17	\$16	\$16	\$14
	Revenue	\$55	\$54	\$39	\$32	\$47	\$50	\$44	\$44	\$45	\$43	\$51	\$49	\$47
Q/Q %		0%	-1%	-27%	-18%	46%	8%	-13%	1%	2%	-4%	15%	11%	5%
Y/Y%		29%	39%	-28%	-41%	-14%	-7%	11%	38%	-4%	-9%	9%	6%	-6%
Chipsets	Units Mu	6.896	8.437	5.176	6.004	8.352	11.081	13.042	11.559	14.070	10.902	14.034	14.148	15.915
	ASP	\$15	\$15	\$15	\$15	\$15	\$15	\$15	\$16	\$16	\$16	\$15	\$15	\$15
	Revenue	\$104	\$130	\$76	\$91	\$127	\$164	\$195	\$181	\$220	\$170	\$213	\$217	\$236
Q/Q %		-2%	24%	-41%	19%	40%	29%	19%	-7%	22%	-6%	18%	20%	7%
Y/Y%		-8%	11%	-30%	-15%	22%	27%	155%	99%	73%	34%	68%	71%	44%

GPG Trend by Division

		Q208	Q308	Q408	Q109	Q209	Q309	Q409	Q110	Q210	Q310	Q410	Q111	Q211
GPG	Units Ku	9,638	13,729	8,185	7,208	10,605	13,692	15,155	15,245	17,292	16,389	15,609	17,128	15,532
	ASP	\$25	\$28	\$32	\$30	\$22	\$21	\$28	\$27	\$25	\$24	\$27	\$24	\$24
	Total Revenue	\$237	\$378	\$264	\$218	\$235	\$292	\$421	\$409	\$440	\$390	\$425	\$413	\$367
	Q/Q %	-6%	60%	-30%	-17%	8%	24%	44%	-3%	8%	-11%	9%	-3%	-11%
	Y/Y%	17%	42%	-6%	-14%	-1%	-23%	60%	88%	87%	33%	1%	1%	-17%
Gaming	Total Revenue	\$33	\$44	\$48	\$35	\$29	\$30	\$57	\$32	\$34	\$29	\$58	\$34	\$28
	Q/Q %	5%	31%	11%	-27%	-18%	4%	91%	-44%	5%	-15%	105%	-42%	-17%
	Y/Y%	110%	98%	33%	11%	-13%	-31%	19%	-9%	16%	-5%	2%	5%	-17%
GPU	Units Ku	9,638	13,729	8,185	7,208	10,605	13,692	15,155	15,245	17,292	16,389	15,609	17,128	15,532
	ASP	\$21	\$24	\$26	\$25	\$19	\$19	\$24	\$25	\$24	\$22	\$23	\$22	\$22
	Total Revenue	\$204	\$335	\$215	\$183	\$207	\$262	\$364	\$377	\$407	\$361	\$366	\$379	\$339
	Q/Q %	-8%	64%	-36%	-15%	13%	27%	39%	3%	8%	-11%	1%	3%	-11%
	Y/Y%	9%	37%	-12%	-17%	1%	-22%	69%	106%	97%	38%	1%	1%	-17%
AIB / Retail	Units Ku	1,802	3,648	2,067	2,365	1,864	3,126	3,230	2,738	2,373	3,212	3,702	3,176	2,825
	ASP	\$41	\$39	\$44	\$33	\$28	\$22	\$42	\$41	\$43	\$33	\$35	\$31	\$30
	Total Revenue	\$74	\$143	\$92	\$78	\$52	\$69	\$136	\$113	\$103	\$106	\$129	\$98	\$85
	Q/Q %	-12%	94%	-36%	-15%	-33%	33%	96%	-17%	-9%	3%	22%	-24%	-14%
	Y/Y%	6%	72%	12%	-7%	-29%	-52%	48%	45%	98%	52%	-5%	-13%	-18%
DT OEM / PCTV	Units Ku	4,214	4,178	2,973	2,435	3,638	3,718	3,586	3,642	4,109	4,115	3,121	3,334	3,330
	ASP	\$13	\$14	\$16	\$16	\$14	\$13	\$14	\$14	\$15	\$14	\$16	\$16	\$13
	Total Revenue	\$53	\$57	\$47	\$40	\$51	\$47	\$51	\$52	\$62	\$59	\$50	\$53	\$45
	Q/Q %	26%	8%	-19%	-14%	28%	-8%	8%	3%	18%	-4%	-16%	7%	-16%
	Y/Y%	0%	-41%	-51%	-6%	-4%	-18%	9%	31%	21%	27%	-1%	2%	-27%
Mobile	Units Ku	3,546	5,855	3,098	2,359	5,045	6,784	8,196	8,762	10,694	8,929	8,640	10,457	9,212
	ASP	\$17	\$17	\$18	\$16	\$15	\$14	\$15	\$16	\$15	\$15	\$15	\$17	\$17
	Total Revenue	\$60	\$100	\$54	\$37	\$76	\$96	\$126	\$140	\$165	\$130	\$134	\$178	\$160
	Q/Q %	4%	66%	-46%	-31%	102%	26%	32%	11%	18%	-21%	3%	33%	-10%
	Y/Y%	18%	101%	4%	-35%	25%	-4%	132%	274%	118%	36%	6%	27%	-3%
Memory	Total Revenue	\$6	\$25	\$15	\$19	\$18	\$41	\$44	\$60	\$63	\$51	\$37	\$32	\$31
	Q/Q %	-59%	335%	-40%	24%	-3%	123%	9%	35%	6%	-19%	-27%	-15%	-2%
	Y/Y%	> 500%	> 500%	> 500%	33%	215%	61%	193%	218%	248%	26%	-15%	-47%	-51%
WS	Units Ku	76	49	47	49	57	64	83	102	115	133	144	161	166
	ASP	\$120	\$174	\$164	\$160	\$154	\$137	\$124	\$113	\$116	\$110	\$110	\$114	\$114
	Total Revenue	\$9	\$9	\$8	\$8	\$9	\$9	\$10.3	\$12	\$13	\$15	\$16.0	\$18	\$19
	Q/Q %	-32%	-6%	-9%	1%	12%	0%	17%	12%	16%	10%	9%	15%	4%
	Y/Y%	-30%	-40%	-47%	-41%	-3%	3%	33%	46%	51%	66%	55%	59%	42%

MP Summary Revenue/Units/ASP by Segment & Brand

Segment	Brand	Q211			Q111			Q210			QOQ % Change			YOY % Change		
		Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP
Desktop	Athlon II	\$377.94	7.861	\$48.1	\$392.54	8.037	\$49	\$328.00	6.515	\$ 50.3	-4%	-2%	-2%	15%	21%	-5%
	Phenom II	\$124.82	1.256	\$99.3	\$161.51	1.408	\$115	\$115.20	0.894	\$130.3	-23%	-11%	-13%	8%	42%	-24%
	A Series - Llano	\$7.76	0.070	\$111.1	\$0.00	-	\$0	\$0.00	-	\$ -	0%	0%	0%	-	-	-
	E Series - Brazos	\$23.77	0.749	\$31.8	\$10.13	0.279	\$36	\$0.00	-	\$ -	135%	168%	-12%	-	-	-
	Other	\$36.22	0.643	\$56.3	\$36.68	1.409	\$27	\$74.47	2.348	\$ 31.7	-6%	-54%	105%	-51%	-73%	77%
	Total	\$570.51	11.258	\$50.7	\$602.86	11.133	\$54	\$517.67	9.747	\$ 53.1	-5%	1%	-6%	10%	16%	-5%
Notebook	Athlon II	\$29.19	0.721	\$40.5	\$71.64	2.060	\$35	\$138.13	3.560	\$ 38.8	-59%	-65%	16%	-79%	-90%	4%
	Phenom II	\$38.36	0.608	\$63.1	\$37.71	0.575	\$66	\$56.37	0.617	\$ 91.3	2%	6%	-4%	-32%	-2%	-31%
	A Series - Llano	\$65.94	0.971	\$67.9	\$0.09	0.001	\$78	\$0.00	-	\$ -	76752%	88168%	-13%	0%	-	-
	C Series - Brazos	\$42.46	2.092	\$20.3	\$22.14	0.934	\$24	\$0.00	-	\$ -	92%	124%	-14%	0%	-	-
	E Series - Brazos	\$99.23	2.994	\$33.1	\$80.67	2.372	\$34	\$0.00	-	\$ -	23%	26%	-3%	0%	-	-
	V Series - Nile	\$3.83	0.147	\$26.0	\$14.91	0.612	\$24	\$24.35	1.034	\$ 23.6	-74%	-76%	7%	-84%	-86%	10%
	Z Series - Brazos Tablet	\$0.11	0.005	\$22.6	\$1.85	0.088	\$21	\$0.00	-	\$ -	-94%	-95%	8%	0%	-	-
	Other	\$10.55	0.184	\$57.5	\$15.38	0.278	\$55	\$70.59	1.749	\$ 40.3	-31%	-34%	4%	-85%	-90%	42%
	Total	\$289.67	7.721	\$37.5	\$244.38	6.920	\$35	\$289.44	6.861	\$ 41.6	19%	12%	6%	0%	11%	-10%
Server	Opteron	\$63.63	0.2241	\$283.9	\$85.83	0.257	\$335	\$138.45	0.250	\$553.8	-22%	3%	-24%	-40%	-100%	-18%
Total MPU	Athlon II	\$407.13	8.583	\$47.4	\$464.19	10.097	\$46	\$466.13	10.076	\$ 46.3	-12%	-15%	3%	-13%	-15%	3%
	Phenom II	\$163.19	1.864	\$87.5	\$199.21	1.983	\$100	\$171.57	1.501	\$114.3	-18%	-6%	-13%	-5%	24%	-23%
	Opteron	\$63.63	0.224	\$283.9	\$85.83	0.257	\$335	\$138.45	0.250	\$ -	-26%	-13%	-15%	-54%	-10%	-
	A Series - Llano	\$73.70	1.041	\$70.8	\$0.09	0.001	\$78	\$0.00	-	\$ -	-	-	-	0%	-	-
	C Series - Brazos	\$42.46	2.092	\$20.3	\$22.14	0.934	\$24	\$0.00	-	\$ -	92%	124%	-14%	0%	-	-
	E Series - Brazos	\$123.00	3.743	\$32.9	\$90.80	2.651	\$34	\$0.00	-	\$ -	35%	41%	-4%	0%	-	-
	V Series - Nile	\$3.83	0.147	\$26.0	\$14.91	0.612	\$24	\$24.35	1.034	\$ 23.6	-74%	-76%	7%	-84%	-86%	10%
	Z Series - Brazos Tablet	\$0.11	0.005	\$22.6	\$2.16	0.100	\$22	\$0.00	-	\$ -	-	-	-	0%	-	-
	Other	\$46.77	1.506	\$31.1	\$53.75	1.674	\$32	\$145.06	4.097	\$ 35.4	-13%	-10%	-3%	-68%	-63%	-12%
	Total MPU	\$923.82	19.204	\$48.1	\$933.67	18.310	\$ 51	\$945.56	18.958	\$ 50.8	-1%	5%	-6%	-2%	13%	-14%

Client Fusion APU/Chipsets

Desktop				Q211			Q111			QOQ % Change		
				Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP
APUs												
Ontario - Brazos				\$23.8	0.7	\$31.8	\$10.4	0.291	\$35.8	127%	157%	-11%
Llano - Lynx				\$7.8	0.1	\$110.9	-	0.000	-	-	-	-
Total APU Desktop				\$31.5	0.8	\$38.5	\$10.4	0.291	\$35.8	202%	181%	7%
Chipsets												
Hudson 1				\$9.1	0.708	\$12.8	\$3.2	0.251	\$12.7	0%	0%	0%
Hudson 2				\$29.3	1.566	\$18.7	\$0.0	0.001	\$18.0	186%	182%	1%
Total Hudson Chipset				\$38.4	2.3	\$16.9	\$3.2	0.252	\$30.7	325841%	313187%	4%
Total Desktop				\$70.0	3.093	\$ 23	\$13.6	0.543	\$ 25	413%	470%	-10%
				Rev (\$M)	Units (M)		Rev (\$M)	Units (M)				
Total Desktop				\$570.3	11.257		\$602.9	11.13				
Fusion APU % of Total Desktop				6%	7%		2%	3%				
Notebook				Q211			Q111			QOQ % Change		
				Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (K)	ASP
APUs												
Ontario - Brazos				\$140.1	5.057	\$27.7	\$104.7	3.394	\$30.8	0%	0%	0%
Llano - Sabine				\$67.6	1.004	\$67.3	\$0.1	0.001	\$78.0	34%	49%	-10%
Total APU Notebook				\$207.7	6.061	\$34.3	\$104.7	3.395	\$109	78649%	91207%	-14%
Chipsets												
Hudson 1				\$67.2	5.209	\$12.9	\$44.2	3.402	\$13.0	98%	79%	-69%
Hudson 2				\$22.4	1.361	\$16.5	\$2.6	0.154	\$16.8	0%	0%	0%
Total Hudson Chipset				\$89.6	6.6	\$13.6	\$46.8	3.555	\$13.2	52%	53%	-1%
Total Notebook				\$297.3	12.6	\$23.54	\$151.6	6.950	\$ 21.8	768%	784%	-2%
				Rev (\$M)	Units (M)		Rev (\$M)	Units (M)		81%	85%	4%
Total Notebook				\$289.7	7.722		\$244.4	6.920		184%	180%	1%
Fusion APU % of Total Notebook				72%	78%		43%	49%				
Client				Q211			Q111			QOQ % Change		
				Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP
Total Client APU				\$239.2	6.9	\$34.8	\$115.2	3.686	\$31.2	108%	87%	11%
Total Client APU Chipset				\$128.0	8.8	\$14.5	\$50.0	3.807	\$13.1	156%	132%	10%
Total Client				\$367.3	15.7	\$ 23.4	\$165.2	7.493	\$22.0	122%	110%	6%
				Rev (\$M)	Units (M)		Rev (\$M)	Units (M)				
Total Client				\$1,096.0	34.894		\$1,064.5	32.202				
Fusion % of Total Client				34%	45%		16%	23%				

Revenue, Units and ASP by Segment and Brand – Detail

Computing Solutions Group																
		Q211			Q210			Q209			Q208			Q207		
Segment	Brand	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	Rev (\$M)	Units (M)	ASP	QOQ % Change	YoY % Change	Rev (\$M)	Units (M)	ASP	
Desktop	Athlon	\$0	0.000	-	\$0	0.000	-	\$0	0.000	-	0%	0%	0%	0%	0%	
	Athlon D Core	\$0	0.000	\$36.0	\$0	0.000	\$34.3	\$2	0.073	\$50.3	39%	32%	5%	-100%	-100%	19%
	Athlon64	\$0	0.000	\$16.8	\$0	0.003	\$43.7	\$2	0.156	\$13.4	-115%	-103%	-75%	-101%	-101%	-19%
	Athlon64 D Core	\$1	0.014	\$48.5	\$0	0.014	\$0.0	\$18	0.349	\$51.5	1136%	0%	0%	-104%	-104%	-6%
	Athlon II	\$1	0.063	\$23.6	\$4	0.150	\$24.2	\$1	0.064	\$21.2	-56%	-58%	-3%	9%	-2%	11%
	Athlon II D Core	\$232	5.853	\$39.6	\$249	6.030	\$41.4	\$213	4.903	\$43.4	-7%	-3%	-4%	9%	19%	-9%
	Athlon II T Core	\$26	0.433	\$59.5	\$28	0.459	\$62.2	\$29	0.498	\$56.1	-8%	-6%	-3%	-12%	-13%	1%
	Athlon II Q Core	\$119	1.512	\$78.7	\$112	1.419	\$79.1	\$98	1.050	\$80.3	0%	7%	0%	41%	44%	-2%
	A Series D Core	\$0	0.000	\$55.9	\$0	0.000	\$0.0	\$0	-	\$0.0	0%	0%	0%	0%	0%	0%
	A Series Q Core	\$8	0.070	\$111.2	\$0	0.000	\$0.0	\$0	-	\$0.0	0%	0%	0%	0%	0%	0%
	E Series	\$0	0.015	\$28.9	\$0	0.004	\$0.0	\$0	-	\$0.0	-100%	0%	0%	0%	0%	0%
	E Series D Core	\$23	0.733	\$31.8	\$10	0.276	\$36.8	\$0	-	\$0.0	130%	166%	14%	0%	0%	0%
	Phenom T Core	\$0	0.000	\$0.0	\$0	0.004	\$55.3	\$1	0.021	\$62.9	-57%	-108%	-100%	-93%	-101%	100%
	Phenom Q Core	\$0	0.000	\$0.0	\$0	0.004	\$23.4	\$9	0.144	\$62.0	136%	-9%	35%	-100%	-100%	-1%
	Phenom II D Core	\$20	0.275	\$71.0	\$22	0.325	\$68.7	\$14	0.179	\$78.1	-12%	-15%	3%	8%	53%	-9%
	Phenom II T Core	\$5	0.037	\$92.1	\$3	0.040	\$86.1	\$3	0.042	\$79.8	1%	-6%	7%	2%	-12%	15%
	Phenom II Q Core	\$64	0.693	\$92.7	\$78	0.699	\$111.4	\$50	0.422	\$125.2	-18%	-1%	-17%	22%	64%	-26%
	Phenom II Q Core	\$18	0.252	\$149.6	\$58	0.345	\$167.7	\$45	0.241	\$187.2	-35%	-27%	-11%	-16%	5%	-20%
	Sempron	\$16	0.567	\$28.7	\$21	0.753	\$28.0	\$27	1.051	\$25.7	-23%	-25%	3%	-40%	-40%	12%
	Sempron D Core	\$21	0.771	\$26.7	\$17	0.651	\$26.1	\$15	0.554	\$26.6	21%	19%	2%	40%	39%	0%
	Z Series D Core	\$0	0.000	\$0.0	\$0	0.002	\$26.0	\$0	-	\$0.0	-100%	-100%	-100%	0%	0%	0%
	Total		\$571	11.258	\$50.7	\$603	11.133	\$54.3	\$518	9.747	\$53.3	8%	2%	-6%	10%	28%
Notebook	Athlon	\$0	0.000	-	\$1	0.000	-	\$0	-	-	-103%	0%	0%	-157%	0%	0%
	Athlon64	\$0	0.000	\$0.0	\$0	0.000	\$37.2	\$6	0.252	\$25.0	-136%	-92%	-100%	-99%	-100%	100%
	Athlon64 D Core	\$0	0.000	\$0.0	\$0	0.019	\$0.0	\$9	0.227	\$37.9	-44%	-98%	0%	-101%	-100%	100%
	Athlon II	\$1	0.014	\$59.1	\$2	0.089	\$25.6	\$4	0.220	\$19.4	-76%	-84%	53%	-87%	-93%	102%
	Athlon II D Core	\$29	0.707	\$40.5	\$69	1.970	\$33.2	\$14	3.341	\$40.1	-50%	-64%	15%	-79%	-79%	1%
	A Series D Core	\$25	0.452	\$54.3	\$0	0.000	\$0.0	\$0	-	\$0.0	-100%	0%	0%	0%	0%	0%
	A Series Q Core	\$41	0.519	\$79.7	\$0	0.001	\$78.0	\$0	-	\$0.0	-4814%	47102%	2%	0%	0%	0%
	C Series	\$0	0.026	\$17.8	\$1	0.044	\$18.8	\$0	-	\$0.0	-45%	-42%	-5%	0%	0%	0%
	C Series D Core	\$42	2.066	\$20.3	\$21	0.890	\$24.0	\$0	-	\$0.0	97%	132%	15%	0%	0%	0%
	E Series	\$6	0.254	\$23.8	\$8	0.313	\$23.3	\$0	-	\$0.0	-24%	-19%	-6%	0%	0%	0%
	E Series D Core	\$93	2.740	\$34.0	\$73	2.059	\$35.3	\$0	-	\$0.0	18%	33%	-4%	0%	0%	0%
	Phenom II D Core	\$11	0.247	\$43.7	\$16	0.263	\$58.9	\$6	0.101	\$58.8	-30%	-9%	-26%	52%	145%	-26%
	Phenom II T Core	\$5	0.028	\$92.3	\$10	0.138	\$72.2	\$29	0.348	\$86.2	-74%	-80%	28%	-91%	-92%	11%
	Phenom II Q Core	\$25	0.332	\$75.0	\$12	0.171	\$70.4	\$21	0.168	\$127.6	104%	92%	7%	16%	98%	-41%
	Phenom II Q Core	\$0	0.000	\$0.0	\$0	0.000	\$0.0	\$0	-	\$0.0	0%	0%	0%	0%	0%	0%
	Sempron	\$0	0.000	\$142.4	\$0	0.000	\$0.0	\$10	0.424	\$23.9	1943%	-250%	0%	-100%	-100%	505%
	Sempron D Core	\$0	0.000	\$0.0	\$0	0.000	\$0.0	\$0	-	\$0.0	0%	0%	0%	0%	0%	0%
	Turion64	\$0	0.000	\$0.0	\$0	0.001	\$162.7	\$0	0.000	\$0.0	-100%	-100%	-100%	-100%	0%	0%
	Turion64 D Core	\$1	0.014	\$68.7	\$0	0.023	\$0.0	\$3	0.037	\$76.8	-268%	-110%	0%	-127%	-106%	328%
	Turion II D Core	\$11	0.185	\$61.3	\$15	0.236	\$62.1	\$43	0.809	\$52.7	-22%	-21%	-1%	-73%	-77%	16%
	V Series	\$4	0.147	\$26.0	\$15	0.612	\$24.3	\$24	1.034	\$23.5	-74%	-76%	7%	-84%	-86%	10%
	Z Series D Core	\$0	0.005	\$22.6	\$2	0.088	\$20.9	\$0	-	\$0.0	-94%	-95%	8%	0%	0%	0%
Total		\$299	7.721	\$37.5	\$348	8.920	\$39.3	\$289	6.961	\$41.6	12%	12%	6%	0%	11%	-10%
Server	Opteron	\$0	0.000	\$0.0	\$0	0.000	488.79	\$0	0.000	-	-160%	-104%	-100%	-140%	-120%	0%
	Opteron D Core	\$0	0.000	\$393.1	\$1	0.019	\$0.0	\$3	0.004	\$0.0	-113%	-137%	0%	-97%	-94%	0%
	Opteron Q Core	\$5	0.071	\$70.6	\$9	0.065	\$137	\$11	0.085	\$130	-44%	10%	-46%	-84%	-17%	-8%
	Opteron 6 Core	\$7	0.045	\$154.2	\$11	0.058	\$193	\$8	0.014	\$77.2	-36%	-24%	-16%	-91%	-1%	-78%
	Opteron 8 Core	\$16	0.053	\$303.7	\$13	0.067	\$181	\$8	0.022	\$373	-24%	-22%	-2%	96%	144%	-10%
	Opteron 12 Core	\$16	0.055	\$280.7	\$16	0.066	\$180	\$14	0.025	\$560	-27%	-16%	-7%	151%	121%	14%
	Total	\$64	0.224	\$293.9	\$66	0.297	\$336	\$38	0.290	\$664	-26%	-13%	-15%	-94%	-10%	-46%
Total MPU	Athlon	\$0	0.000	\$0.0	\$1	0.000	\$0.0	\$0	0.000	\$0.0	-106%	0%	0%	-125%	-100%	0%
	Athlon D Core	\$0	0.000	\$36.0	\$0	0.000	\$34	\$2	0.073	\$30	39%	32%	5%	-100%	-100%	19%
	Athlon64	\$0	0.000	\$0.0	\$0	0.000	\$0	\$8	0.408	\$21	-156%	-176%	0%	-99%	-101%	-100%
	Athlon64 D Core	\$1	0.014	\$58.6	\$0	0.005	\$0	\$27	0.576	\$46	207%	-350%	0%	-103%	-102%	27%
	Athlon II	\$2	0.078	\$26.4	\$6	0.239	\$25	\$9	0.284	\$20	-65%	-68%	7%	-64%	-73%	33%
	Athlon II D Core	\$260	6.560	\$39.7	\$138	7.980	\$40	\$147	8.244	\$42	-18%	-18%	0%	-25%	-20%	6%
	Athlon II T Core	\$26	0.433	\$59.5	\$28	0.459	\$61	\$29	0.498	\$59	-8%	-6%	-3%	-12%	-13%	1%
	Athlon II Q Core	\$119	1.512	\$78.7	\$112	1.419	\$79	\$98	1.050	\$80	0%	7%	0%	41%	44%	-2%
	A Series D Core	\$25	0.452	\$54.3	\$0	0.000	\$0	\$0	-	\$0	0%	0%	0%	0%	0%	0%
	A Series Q Core	\$49	0.519	\$94.6	\$0	0.001	\$78	\$0	-	\$0	57170%	47102%	21%	0%	0%	0%
	C Series	\$0	0.096	\$0.0	\$1	0.044	\$19	\$0	-	\$0	45%	115%	-100%	0%	0%	0%
	C Series D Core	\$42	2.066	\$20.3	\$21	0.890	\$24	\$0	-	\$0	97%	132%	15%	0%	0%	0%
	E Series	\$6	0.269	\$24.0	\$8	0.316	\$25	\$0	-	\$0	-18%	-15%	-4%	0%	0%	0%
	E Series D Core	\$117	3.474	\$33.5	\$89	3.335	\$35	\$0	-	\$0	41%	46%	-6%	0%	0%	0%
	Opteron	\$0	0.000	\$0.0	\$0	0.000	\$489	\$0	0.000	\$0	-160%	-104%	-100%	-140%	-120%	0%
	Opteron D Core	\$0	0.000	\$393.1	\$1	0.019	\$0	\$3	0.004	\$0	-113%	-137%	0%	-97%	-94%	0%
	Opteron Q Core	\$5	0.071	\$70.6	\$9	0.065	\$137	\$11	0.085	\$130	-44%	10%	-46%	-84%	-17%	-8%
	Opteron 6 Core	\$7	0.045	\$154.2	\$11	0.058	\$193	\$8	0.014	\$0	-36%	-24%	-16%	-91%	-1%	-78%
	Opteron 8 Core	\$16	0.053	\$303.7	\$13	0.067	\$181	\$8	0.022	\$373	-24%	-22%	-2%	96%	144%	-10%
	Opteron 12 Core	\$16	0.055	\$280.7	\$16	0.066	\$180	\$14	0.025	\$560	-27%	-16%	0%	153%	121%	0%
	Phenom T Core	\$0	0.000	\$0.0	\$0	0.004	\$55	\$3	0.021	\$63	-57%	-108%	-100%	-93%	-101%	100%
	Phenom Q Core	\$0	0.000	\$0.0	\$0	0.001	\$23	\$9	0.144	\$62	136%	-9%	35%	-100%	-100%	-1%
	Phenom II D Core	\$6	0.052	\$58.1	\$16	0.058	\$64	\$20	0.280	\$71	-20%	-11%	-10%	52%	86%	-18%
	Phenom II T Core	\$5	0.066	\$92.2	\$13	0.178	\$75	\$32	0.391	\$89	-55%	-63%	23%	-81%	-83%	11%
	Phenom II Q Core	\$89	1.025	\$87.0	\$90	0.873	\$103	\$74	0.590	\$124	-1%	17%	-16%	20%	74%	-31%
	Phenom II Q Core	\$18	0.252	\$149.6	\$58	0.345	\$168	\$45	0.241	\$187	-35%	-27%	-11%	-16%	5%	-20%
	Sempron	\$16	0.567	\$28.8	\$21	0.753	\$28	\$17	1.475	\$25	-23%	-25%	3%	-56%	-62%	15%
	Sempron D Core	\$21	0.771	\$26.7	\$17	0.651	\$26	\$15	0.554	\$27	21%	19%	2%	40%	39%	0%
	Turion64	\$0	0.000	\$0.0	\$0	0.000	\$163	\$0	0.000	\$0	-100%	-100%	-100%	-100%	-100%	0%
Turion64 D Core	\$1	0.014	\$68.7	\$0	0.023	\$0	\$3	0.037	\$77	-268%	-110%	0%	-127%	-106%	328%	
Turion II D Core	\$11	0.185	\$61.3	\$15	0.236	\$62	\$43	0.809	\$53	-22%	-21%	-1%	-73%	-77%	16%	
V Series	\$4	0.147	\$26.0	\$15	0.612											

Graphics Product Group

		Q211		
		Rev (\$M)	Units (K)	ASP
Graphics				
P110, P112, P113	Radeon	\$129.1	6.121	\$21.1
P120	Mobility Radeon	\$159.6	9.212	\$17.3
P115	Multimedia	\$0.1	0.033	\$0.0
P116	Workstation	\$19.0	0.166	\$114.4
P130	Memory	\$31.0	0.000	\$0.0
P131	NRE \ Royalties - GPG	\$0.3	0.000	\$0.0
P113	Gaming	\$27.9	0.000	\$0.0
GPG Total		\$287.0	15.532	\$18.8

Q111		
Rev (\$M)	Units (K)	ASP
\$151	6.497	\$23.3
\$178	10.457	\$17.0
\$0	0.014	\$0.0
\$18	0.161	\$113.7
\$32	0.000	\$0.0
\$0	0.000	\$0.0
\$14	0.000	\$0.0
\$413	17.128	\$23.9

Q210		
Rev (\$M)	Units (K)	ASP
\$164	6.482	\$25.4
\$164	10.694	\$15.5
\$1		\$0.0
\$13	0.116	\$114.3
\$63		\$0.0
\$0		\$0.0
\$14		\$0.0
\$449	17.292	\$19.9

QOQ % Change			YOY % Change		
Rev (\$M)	Units (K)	ASP	Rev (\$M)	Units (K)	ASP
-15%	-6%	-9%	-21%	-6%	-17%
-10%	-12%	2%	-3%	-14%	12%
25%	144%	0%	-86%	0%	0%
4%	3%	1%	41%	44%	0%
-2%	0%	0%	-51%	0%	0%
31%	39%	0%	-9%	0%	0%
-17%	0%	0%	-17%	0%	0%
-12%	-9%	-2%	-17%	-10%	0%

Handheld

		Q211		
		Rev (\$M)	Units (K)	ASP
HH				
	Imageon (Handheld)	\$0.3	0.000	\$0
	NRE \ Royalties - HH			-
HH Total		\$0.3	0.000	\$ -

Q111		
Rev (\$M)	Units (K)	ASP
\$0	0.103	\$0
		-
\$0	0.103	\$ 2

Q210		
Rev (\$M)	Units (K)	ASP
\$1	0.196	\$0
		-
\$1	0.196	\$ 7

QOQ % Change			YOY % Change		
Rev (\$M)	Units (K)	ASP	Rev (\$M)	Units (K)	ASP
91%	-100%	0%	-74%	-100%	0%
0%	0%	0%	0%	0%	0%
91%	-100%	-100%	-74%	-100%	-100%

Total AMD	\$1,574	\$4,278	\$26.2
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\$1,613	\$2,642	\$ 29.3
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\$1,693	\$9,963	\$ 80.5
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-2%	2%	-4%	9%	8%	-8%
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Opteron Sales by Platform

	Q2-11	Q1-11	Q2-10	QOQ %	YOY%
1000 series					
Units (M)	0.005	0.003	0.019	39%	-74%
ASP	\$ 97.3	\$ 107.7	\$ 164.7	-10%	-41%
Rev \$ (M)	\$ 0.5	\$ 0.4	\$ 3.1	26%	-85%
2000 series					
Units (M)	0.038	0.030	0.116	26%	-67%
ASP	\$ 73.8	\$ 173.8	\$ 326.0	-58%	-77%
Rev \$ (M)	\$ 2.8	\$ 5.3	\$ 37.9	-46%	-93%
4000 series					
Units (M)	0.065	0.037	0.000	74%	28082%
ASP	\$ 86.6	\$ 112.8	\$ 134.6	-23%	-36%
Rev \$ (M)	\$ 5.6	\$ 4.2	\$ 0.0	34%	18037%
6000 series					
Units (M)	0.108	0.134	0.047	-19%	132%
ASP	\$ 476.6	\$ 497.2	\$ 473.6	-4%	1%
Rev \$ (M)	\$ 51.5	\$ 66.4	\$ 22.1	-22%	133%
8000 series					
Units (M)	0.008	0.012	0.068	-33%	-88%
ASP	\$ 402.2	\$ 714.4	\$ 1,109.6	-44%	-64%
Rev \$ (M)	\$ 3.2	\$ 8.6	\$ 75.3	-63%	-96%
Other					
Units (M)	0.000	0.040	N/A	-100%	N/A
ASP	N/A	\$ 25.0	\$ -	N/A	-
Rev \$ (M)	\$ -	\$ 1.0	N/A	-100%	N/A
Total Units (M)	0.224	0.257	0.250	-13%	-10%
ASP	\$ 283.9	\$ 334.5	\$ 553.8	-15%	-49%
Total Rev \$ (M)	\$ 63.6	\$ 85.8	\$ 138.5	-26%	-54%

Chipset by Product Group

Product	Prod Group	Data	Q1 09	Q2 09	Q3 09	Q4 09	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q2 QoQ	Q2 YoY	Q-o-Q var	Y-o-Y var	
Legacy Chipsets	Desktop	Revenue (M)	\$ 47	\$ 63	\$ 82	\$ 84	\$ 275	\$ 72	\$ 78	\$ 73	\$ 95	\$ 324	\$ 96	\$ 67	-30%	-15%	\$ (29)	\$ (11)	
		Units (K)	3,056	4,072	5,629	5,943	18,700	4,776	5,086	4,813	6,702	21,520	6,359	4,644	-27%	-9%	(1,715)	(442)	
		ASP	\$ 15.22	\$ 15.45	\$ 14.52	\$ 14.17	\$ 14.73	\$ 15.16	\$ 15.43	\$ 15.23	\$ 14.21	\$ 15.05	\$ 15.16	\$ 14.44	-5%	-6%	\$ (0.73)	\$ (1.00)	
	Notebook	Revenue (M)	\$ 44	\$ 64	\$ 82	\$ 109	\$ 299	\$ 105	\$ 136	\$ 93	\$ 96	\$ 429	\$ 67	\$ 38	-44%	-72%	\$ (29)	\$ (98)	
		Units (K)	2,947	4,279	5,441	7,077	19,745	6,645	8,800	5,984	5,886	27,316	3,865	2,331	-40%	-74%	(1,534)	(6,469)	
		ASP	\$ 15.00	\$ 15.02	\$ 15.10	\$ 15.34	\$ 15.15	\$ 15.75	\$ 15.43	\$ 15.55	\$ 16.31	\$ 15.70	\$ 17.27	\$ 16.09	-7%	4%	\$ (1.18)	\$ 0.66	
	Server	Revenue (M)	\$ 0	\$ 0	\$ 1	\$ 1	\$ 1	\$ 4	\$ 6	\$ 4	\$ 5	\$ 15	\$ 4	\$ 4	-5%	-34%	\$ (0)	\$ (2)	
		Units (K)	-	0	12	22	34	138	184	104	130	412	118	95	-20%	-48%	(23)	(89)	
		ASP	\$ -	\$ 45.48	\$ 47.31	\$ 31.35	\$ 37.14	\$ 27.92	\$ 32.08	\$ 38.56	\$ 38.14	\$ 36.21	\$ 34.65	\$ 40.76	18%	27%	\$ 6.11	\$ 8.68	
	Finance	Revenue (M)	\$ -	\$ -	\$ -	\$ 2	\$ 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -
Units (K)		-	-	-	31	31	-	-	-	-	-	-	-	-			-	-	
ASP		\$ -	\$ -	\$ -	\$ 53.54	\$ 53.54	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	
Fusion Controller Hubs	Desktop	Revenue (M)	\$ 91	\$ 127	\$ 164	\$ 195	\$ 577	\$ 181	\$ 220	\$ 170	\$ 196	\$ 768	\$ 167	\$ 108	-35%	-51%	\$ (59)	\$ (112)	
		Units (K)	6,004	8,351	11,081	13,073	38,509	11,559	14,070	10,901	12,718	49,248	10,342	7,070	-32%	-50%	(3,272)	(7,000)	
		ASP	\$ 15.11	\$ 15.23	\$ 14.84	\$ 14.92	\$ 14.99	\$ 15.65	\$ 15.65	\$ 15.63	\$ 15.43	\$ 15.59	\$ 16.17	\$ 15.34	-5%	-2%	\$ (0.84)	\$ (0.32)	
	Notebook	Revenue (M)								\$ 0	\$ 1	\$ 1	\$ 3	\$ 38	1105%			\$ 35	\$ 38
		Units (K)								0	41	41	252	2,275	804%			2,023	2,275
		ASP								\$ 40.00	\$ 13.03	\$ 13.18	\$ 12.68	\$ 16.89	33%			\$ 4.21	\$ 16.89
	Server	Revenue (M)								\$ 0	\$ 17	\$ 17	\$ 47	\$ 90	91%			\$ 43	\$ 90
		Units (K)								2	1,275	1,276	3,554	6,570	85%			3,016	6,570
		ASP								\$ 37.49	\$ 13.02	\$ 13.05	\$ 13.17	\$ 13.64	4%			\$ 0.47	\$ 13.64
	Total Chipsets	Revenue (M)	\$ 91	\$ 127	\$ 164	\$ 195	\$ 577	\$ 181	\$ 220	\$ 170	\$ 213	\$ 785	\$ 217	\$ 236	9%	7%		\$ 19	\$ 16
Units (K)		6,004	8,351	11,081	13,073	38,509	11,559	14,070	10,902	14,034	50,566	14,148	15,915	12%	13%	1,766	1,844		
ASP		\$ 15.11	\$ 15.23	\$ 14.84	\$ 14.92	\$ 14.99	\$ 15.65	\$ 15.65	\$ 15.63	\$ 15.20	\$ 15.52	\$ 15.36	\$ 14.86	-3%	-5%	\$ (0.50)	\$ (0.79)		

Chipsets by Channel:-

Channel	Data	Q1 09	Q2 09	Q3 09	Q4 09	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q2 QoQ	Q2 YoY
Channel	Revenue (M)	\$ 31	\$ 44	\$ 56	\$ 59	\$ 190	\$ 51	\$ 49	\$ 46	\$ 63	\$ 208	\$ 71	\$ 72	1%	46%
	Units (K)	2,032	2,913	3,846	4,122	12,913	3,323	3,046	3,021	4,483	13,874	4,616	4,519	-2%	48%
	ASP	\$ 15.09	\$ 14.95	\$ 14.68	\$ 14.41	\$ 14.72	\$ 15.40	\$ 16.10	\$ 15.07	\$ 13.98	\$ 15.02	\$ 15.45	\$ 15.87	3%	-1%
OEM	Revenue (M)	\$ 60	\$ 84	\$ 108	\$ 136	\$ 387	\$ 130	\$ 171	\$ 125	\$ 151	\$ 576	\$ 146	\$ 165	13%	-4%
	Units (K)	3,971	5,439	7,235	8,951	25,596	8,236	11,024	7,881	9,551	36,692	9,533	11,396	20%	3%
	ASP	\$ 15.12	\$ 15.38	\$ 14.92	\$ 15.16	\$ 15.13	\$ 15.76	\$ 15.53	\$ 15.85	\$ 15.77	\$ 15.71	\$ 15.31	\$ 14.46	-6%	-7%
Revenue (M)		\$ 91	\$ 127	\$ 164	\$ 195	\$ 577	\$ 181	\$ 220	\$ 170	\$ 213	\$ 795	\$ 217	\$ 236	9%	7%
Units (K)		6,004	8,351	11,081	13,073	38,509	11,559	14,070	10,902	14,034	50,566	14,148	15,915	12%	13%
ASP		\$ 15.11	\$ 15.23	\$ 14.84	\$ 14.92	\$ 14.99	\$ 15.65	\$ 15.65	\$ 15.63	\$ 15.20	\$ 15.52	\$ 15.38	\$ 14.86	-3%	-5%

Source: Chipset Finance, July, 2011

Chipset by Platform and Product Group

Platform	Group	Data	Q1 09	Q2 09	Q3 09	Q4 09	2009	Q1 10	Q2 10	Q3 10	Q4 10	2010	Q1 11	Q2 11	Q2 QoQ	Q2 YoY	Q-o-Q var	Y-o-Y var	
AMD	Notebook	Revenue (M)	\$ 45	\$ 60	\$ 80	\$ 84	\$ 270	\$ 72	\$ 78	\$ 93	\$ 112	\$ 443	\$ 114	\$ 127	12%	62%	\$ 14	\$ 49	
		Units (K)	3,065	4,071	5,628	5,942	18,696	4,776	5,086	5,975	7,111	28,517	7,420	8,901	20%	75%	1,481	3,816	
		ASP	\$ 14.80	\$ 14.86	\$ 14.30	\$ 14.10	\$ 14.44	\$ 15.14	\$ 15.43	\$ 15.55	\$ 15.69	\$ 15.54	\$ 15.31	\$ 14.28	-7%	-7%	\$ (1.02)	\$ (1.15)	
	Desktop	Revenue (M)	\$ 42	\$ 63	\$ 81	\$ 108	\$ 294	\$ 104	\$ 135	\$ 72	\$ 98	\$ 324	\$ 100	\$ 106	6%	-22%	\$ 8	\$ (30)	
		Units (K)	2,941	4,250	5,436	7,074	19,601	6,644	8,780	4,762	6,743	21,560	6,610	6,918	5%	-21%	308	(1,861)	
		ASP	\$ 14.67	\$ 14.85	\$ 14.98	\$ 15.21	\$ 14.99	\$ 15.65	\$ 15.41	\$ 15.03	\$ 14.20	\$ 15.04	\$ 15.07	\$ 15.24	1%	-1%	\$ 0.17	\$ (0.16)	
	Server	Revenue (M)	\$ 0	\$ 0	\$ 1	\$ 1	\$ 1	\$ 4	\$ 6	\$ 6	\$ 5	\$ 15	\$ 4	\$ 4	-5%	-34%	\$ (0)	\$ (2)	
		Units (K)	-	0	12	22	34	138	184	162	130	412	118	95	-20%	-48%	(23)	(89)	
		ASP	\$ -	\$ 45.48	\$ 47.31	\$ 31.35	\$ 37.14	\$ 27.92	\$ 32.08	\$ 35.95	\$ 38.14	\$ 36.21	\$ 34.85	\$ 40.76	18%	27%	\$ 6.11	\$ 8.68	
	Intel	Notebook	Revenue (M)	\$ 1	\$ 2	\$ 1	\$ 0	\$ 5	\$ 0	\$ 0	\$ 0	\$ 1	\$ 2	\$ (0)	\$ 0	-26%		\$ 0	\$ (0)
Units (K)			1	1	0	1	3	-	1	3	50	75	(0)	(0)	-100%		0	(1)	
ASP			\$ 964.92	\$ 3,271.30	\$ 8,307.79	\$ 481.50	\$ 1,740.75	\$ -	\$ 24.83	\$ 28.15	\$ 20.51	\$ 31.88	\$ 36.67	\$ (8,227.18)			\$ (8,263.84)	\$ (8,252.00)	
Desktop		Revenue (M)	\$ 3	\$ 1	\$ 1	\$ 1	\$ 5	\$ 1	\$ 1	\$ 0	\$ 0	\$ 0	\$ 0	\$ -	\$ -	-100%		\$ -	\$ (1)
		Units (K)	106	29	5	3	144	1	21	0	-	-	1	-	-	-100%		-	(21)
		ASP	\$ 23.77	\$ 40.01	\$ 155.47	\$ 291.42	\$ 37.24	\$ 1,269.67	\$ 25.93	\$ 54.25	\$ -	\$ 123.41	\$ -	\$ -	-100%		\$ -	\$ (25.93)	
Finance	Revenue (M)	Revenue (M)	\$ -	\$ -	\$ -	\$ 2	\$ 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	
		Units (K)	\$ -	\$ -	\$ -	31	31	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	
		ASP	\$ -	\$ -	\$ -	\$ 53.54	\$ 53.54	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -			\$ -	\$ -	
		Revenue (M)	\$ 91	\$ 127	\$ 164	\$ 195	\$ 577	\$ 181	\$ 220	\$ 170	\$ 213	\$ 785	\$ 217	\$ 236	9%	7%	\$ 19	\$ 18	
Units (K)	6,004	8,351	11,081	13,073	38,509	11,559	14,070	10,902	14,034	50,566	14,148	15,915	12%	13%	1,766	1,844			
	ASP	\$ 15.11	\$ 15.23	\$ 14.84	\$ 14.92	\$ 14.99	\$ 15.65	\$ 15.65	\$ 15.63	\$ 15.20	\$ 15.52	\$ 15.38	\$ 14.86	-3%	-5%	\$ (0.90)	\$ (0.79)		

MPU Revenue by Technology

		Q211		Q111		Q410		Q310		Q210	
		Revenue (\$M)		Revenue (\$M)		Revenue (\$M)		Revenue (\$M)		Revenue (\$M)	
		Units (M)		Units (M)		Units (M)		Units (M)		Units (M)	
Desktop	130NM	\$	0.0	\$	-	\$	0.0	\$	0.0	\$	0.2
	90NM	\$	(0.3)	\$	0.2	\$	(0.3)	\$	0.2	\$	(0.3)
	65NM	\$	(0.4)	\$	0.2	\$	(0.2)	\$	12.3	\$	42.8
	45NM	\$	539.8	\$	592.1	\$	574.5	\$	538.3	\$	475.0
	40NM	\$	23.8	\$	10.4	\$	1.5	\$	-	\$	-
	32NM	\$	7.8	\$	-	\$	-	\$	-	\$	-
	Not assigned	\$	(0.0)	\$	(0.0)	\$	0.0	\$	(0.0)	\$	(0.0)
	Total	\$	570.5	\$	602.9	\$	575.6	\$	550.8	\$	517.7
Notebook	130NM	\$	(0.0)	\$	1.2	\$	(1.5)	\$	(0.0)	\$	0.1
	90NM	\$	(0.0)	\$	(0.0)	\$	0.0	\$	0.0	\$	0.4
	65NM	\$	(0.8)	\$	(0.6)	\$	6.5	\$	5.7	\$	24.5
	45NM	\$	82.8	\$	138.9	\$	227.8	\$	319.7	\$	264.5
	40NM	\$	140.1	\$	104.8	\$	36.7	\$	-	\$	-
	32NM	\$	67.6	\$	0.1	\$	-	\$	-	\$	-
	Not assigned	\$	-	\$	-	\$	0.0	\$	-	\$	0.0
	Total	\$	289.7	\$	244.4	\$	269.5	\$	325.4	\$	289.4
Server	130NM	\$	(0.1)	\$	0.1	\$	(0.0)	\$	(0.0)	\$	(0.1)
	90NM	\$	0.1	\$	(0.7)	\$	(0.1)	\$	6.6	\$	3.6
	65NM	\$	0.0	\$	0.4	\$	0.2	\$	2.3	\$	2.6
	45NM	\$	63.6	\$	86.0	\$	109.5	\$	128.2	\$	132.2
	Not assigned	\$	0.0	\$	-	\$	0.0	\$	-	\$	0.3
	Total	\$	63.6	\$	85.8	\$	109.7	\$	137.1	\$	138.5
Total	130NM	\$	(0.1)	\$	1.3	\$	(1.5)	\$	(0.0)	\$	0.1
	90NM	\$	(0.2)	\$	(0.5)	\$	(0.4)	\$	6.9	\$	3.6
	65NM	\$	(1.2)	\$	(0.0)	\$	6.5	\$	20.3	\$	69.8
	45NM	\$	686.1	\$	817.0	\$	911.8	\$	986.2	\$	871.7
	40	\$	163.9	\$	115.2	\$	38.3	\$	-	\$	-
	32NM	\$	75.4	\$	0.1	\$	-	\$	-	\$	-
	Not assigned	\$	(0.0)	\$	(0.0)	\$	0.0	\$	(0.0)	\$	0.3
	Total	\$	923.8	\$	933.1	\$	954.8	\$	1,013.3	\$	945.6
Total %	130NM	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	90NM	0%	0%	0%	0%	0%	0%	1%	0%	0%	0%
	65NM	0%	0%	0%	0%	1%	4%	2%	3%	7%	11%
	45NM	74%	64%	88%	80%	96%	89%	97%	96%	92%	89%
	40	18%	30%	12%	20%	4%	7%	0%	0%	0%	0%
	32NM	8%	6%	0%	0%	0%	0%	0%	0%	0%	0%
	Not assigned	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%
	Total	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%

GPU Revenue by Technology

	Q211		Q111		Change	
	% of Unit	% of Rev	% of Unit	% of Rev	% of Unit	% of Rev
DX11	90%	85%	85%	82%	5%	3%
DX10.1	4%	3%	8%	5%	-4%	-3%
DX10	2%	1%	2%	2%	0%	0%

% of Units by Quarters

	Q211	Q111	Q410	Q310	Q210	Q110	Q409	Q309	Q209
DX11	90%	85%	73%	63%	54%	28%	13%	0%	0%
DX10.1	4%	8%	18%	25%	35%	56%	65%	72%	55%
DX10	2%	2%	4%	6%	5%	9%	10%	15%	28%
DX9	0%	0%	0%	0%	0%	0%	2%	2%	4%
Others	4%	5%	4%	6%	5%	7%	10%	11%	13%

% of Revenue by Quarters

	Q211	Q111	Q410	Q310	Q210	Q110	Q409	Q309	Q209
DX11	85%	82%	75%	60%	53%	36%	35%	3%	0%
DX10.1	3%	5%	10%	14%	23%	36%	41%	61%	46%
DX10	1%	2%	2%	3%	4%	6%	6%	13%	21%
DX9	0%	0%	0%	0%	1%	1%	2%	3%	5%
Others	11%	10%	11%	22%	20%	20%	15%	20%	28%

Exhibit 65

Message

From: Grasby, Darren [/O=AMD/OU=AMDEU2/CN=RECIPIENTS/CN=DGRASBY]
Sent: 4/30/2011 4:03:05 AM
To: Kwok, Kelvin [kelvin.kwok@amd.com]; Kirsch, Travis [travis.kirsch@amd.com]
CC: Huynh, Jack [jack.huynh@amd.com]; Crank, John [john.crank@amd.com]; Killion, Byron [byron.killion@amd.com]
Subject: Re: Lynx Channel Pull In

Ok great.

On the A8 how about we use in EMEA and NA for etailers only ??

From: Kwok, Kelvin
To: Grasby, Darren; Kirsch, Travis
Cc: Huynh, Jack; Crank, John; Killion, Byron
Sent: Sat Apr 30 04:27:07 2011
Subject: RE: Lynx Channel Pull In

Darren,

I don't think we can push a lot on A8-3850 @129 in China. The A6-3650 @109 looks like a sweet price point. Again, I'll get back to you guys if this can become "upside" to the target.

Kelvin

From: Grasby, Darren
Sent: Friday, April 29, 2011 7:13 PM
To: Kirsch, Travis; Kwok, Kelvin
Cc: Huynh, Jack; Crank, John; Killion, Byron
Subject: Re: Lynx Channel Pull In

Hi Travis,

Pull in for 100% yes.

Now I do believe if we get 100k is let some go into other regions maybe an allocation to Elite customers ?

Kelvin if we do ship the majority to China this must be upside to the all in 306 call, let me know ?

Travis when do you need to make the final decision on this ?

Thanks

Darren

From: Kirsch, Travis
To: Kwok, Kelvin; Grasby, Darren
Cc: Huynh, Jack; Crank, John; Killion, Byron
Sent: Thu Apr 28 21:59:38 2011
Subject: Lynx Channel Pull In

Darren, Kelvin,

The current launch date for Lynx is 7/21. ODM's are pushing for an earlier launch date in GC to hit Summer cycle, and based on this feedback, we are proposing pulling the launch date into 7/6. The ODM's confirmed they can be on shelf in GC by 6/27.

If we do this and follow the current silicon schedule, we can revenue ~30k in Q2. With a little pushing, we can get another 50-100k. Current plan is to launch the A8-3850 at \$129 and the A6-3650 at \$109. So, a couple questions...

1. Do you support a pull in?
2. What is a reasonable amount of volume could we revenue? (based on this, I can push for more)
3. Would the Lynx revenue be incremental to our current plan? If so, how much? (Especially in GC)

Crank and I have already discussed this, but we're short on time and I need to get you guys involved now to impact the decision.

Travis

Exhibit 66

Message

From: Yacek, Doug [/O=AMD/OU=AMDUS1/CN=RECIPIENTS/CN=DYACEK]
Sent: 6/14/2011 3:48:23 PM
To: Ostiguy, Sandra [sandra.ostiguy@amd.com]; Aguilar, Chris [chris.aguilar@amd.com]; Nomura, Asuka [asuka.nomura@amd.com]
CC: Raeder, Chris [chris.raeder@amd.com]
Subject: RE: V211 PDP -Margins are down Llano NB ASP's down significantly

Asuka..here you go.

You may want to touch base with Sandra..or I can stop by at 4pm. My recommendation is to hold NB llano asp's at v111 levels (which is right on qtd actual) as I don't think we'll be dropping prices in a constrained environment.

Rgds

Doug

From: Ostiguy, Sandra
Sent: Tuesday, June 14, 2011 3:33 PM
To: Yacek, Doug; Aguilar, Chris
Subject: RE: V211 PDP -Margins are down Llano NB ASP's down significantly

Hi Doug,

Here are the Llano Margins – Q2'11 QTD Actual

Overall, the ASP and GM ties out. The only ,major difference for Q2 is the Group C 3530MX – per QTD Actuals, we do not have any Revenue for this model.

Details are included in the below snapshot – by group and by model.

Thanks,

Sandra



Sandra Ostiguy

Sr. Financial Analyst | PG Finance | AMD
T. 512.602.3044



From: Yacek, Doug
Sent: Tuesday, June 14, 2011 2:00 PM
To: Ostiguy, Sandra; Aguilar, Chris
Subject: FW: V211 PDP -Margins are down Llano NB ASP's down significantly

Let's compare q2 qtd actual...vs the q2 fcst matrix

Thanks

Doug

From: Raeder, Chris
Sent: Tuesday, June 14, 2011 1:11 PM
To: Yacek, Doug; Huynh, Jack; Cloran, Chris
Cc: Nomura, Asuka
Subject: RE: V211 PDP -Margins are down Llano NB ASP's down significantly

We got Q3 pricing from Goelkl's team, shown below (for Q4 we simply assumed a \$1 price drop by OPN). I assume this is already in the hands of the OEM's and locked in. Just spoke to ChrisG and he's double checking where he thinks pricing will land, should have a response today.

Doug, Can you send a table of Q2 actuals to test against the first table he gave us below?

Thanks,

Chris

From: Yacek, Doug
Sent: Tuesday, June 14, 2011 11:25 AM
To: Raeder, Chris; Huynh, Jack; Cloran, Chris
Subject: V211 PDP -Margins are down Llano NB ASP's down significantly
Importance: High

The Gross Margins for Client Q3/Q4 are down close to 2.0 points versus last forecast. The primary issue is Llano Notebook ASP's (LN 4C down \$8, LN2C down \$6). I'm sure Thomas will be all over this. Here are the issues / questions that will arise:

- 1.) What are we dropping asp's 10% (forecast vs. forecast) in a constrained environment
- 2.) Who reviewed and approved this price drop?
- 3.) This drops the Q4 Llano GM's from 53% to 47% dropping us below the 50% we have been promising Thomas..and worse..this is a 6.0 point GM degradation.

My suggestion:

- 1.) Take Llano ASP's back to closer to V111 so it becomes a non-issue
- 2.) If we truly believe this is the correct pricing, I suggest we brief Rick on the issue and then set up a review with Thomas to get his buy in. We'll need the price stacks, where we stand vs. competition etc.
 - a. I know his reaction will be: How can we launch a new product, be capacity constrained, and drop prices 10%.

Following is the analysis. Should I set a meeting to discuss?

Rgds

Doug

	V111		V211		Δ	
	Q3	Q4	Q3	Q4	Q3	Q4
LN - 2C						
Units	1.19	1.14	1.44	1.94	0.25	0.80
ASP	\$56.35	\$55.80	\$51.08	\$49.80	-\$5.27	-\$6.00
CPU	\$36.00	\$29.00	\$36.00	\$29.00	\$0.00	\$0.00
Revenue	\$67.0	\$63.5	\$73.6	\$96.6	\$6.6	\$33.1
GM\$	\$24.2	\$30.5	\$21.7	\$40.3	-\$2.5	\$9.8
GM%	36.1%	48.0%	29.5%	41.8%	-6.6%	-6.3%
LN - 4C						
Units	1.14	1.36	1.63	1.96	0.49	0.60
ASP	\$81.70	\$81.19	\$73.78	\$73.18	-\$7.92	-\$8.02
COGS	\$39.00	\$36.00	\$39.00	\$36.00	\$0.00	\$0.00
Revenue	\$93.3	\$110.1	\$120.2	\$143.1	\$26.9	\$33.0
GM\$	\$48.8	\$61.3	\$56.7	\$72.7	\$7.9	\$11.4
GM%	52.3%	55.7%	47.1%	50.8%	-5.1%	-4.9%
LN Total						
Units	2.33	2.49	3.07	3.90	0.74	1.40
ASP	\$68.77	\$69.61	\$63.13	\$61.53	-\$5.64	-\$8.08
COGS	\$37.47	\$32.81	\$37.59	\$32.51	\$0.12	-\$0.29
Revenue	\$160.3	\$173.6	\$193.8	\$239.7	\$33.5	\$66.1
GM\$	\$73.0	\$91.8	\$78.4	\$113.0	\$5.4	\$21.2
GM%	45.5%	52.9%	40.4%	47.2%	-5.1%	-5.7%

Exhibit 67

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Attorneys for Defendants
 Advanced Micro Devices, Inc.,
 Rory P. Read, Thomas J. Seifert,
 Richard A. Bergman, and Lisa T. Su

**UNITED STATES DISTRICT COURT
 NORTHERN DISTRICT OF CALIFORNIA
 OAKLAND DIVISION**

BABAK HATAMIAN and LUSSA DENNJ
 SALVATORE, individually and on behalf of
 all others similarly situated,

Plaintiffs,

v.

ADVANCED MICRO DEVICES, INC.,
 RORY P. READ, THOMAS J. SEIFERT,
 RICHARD A. BERGMAN, AND LISA T.
 SU,

Defendants.

CASE NO. 14-cv-00226-YGR

CLASS ACTION

DEFENDANT RICHARD A. BERGMAN'S
 SUPPLEMENTAL RESPONSES TO LEAD
 PLAINTIFFS' FIRST SET OF
 INTERROGATORIES

PROPOUNDING PARTY: LEAD PLAINTIFFS

RESPONDING PARTY: DEFENDANT RICHARD A. BERGMAN

SET NO.: ONE

Pursuant to Rule 33 of the Federal Rules of Civil Procedure, as well as all applicable Local Civil Rules of the United States District Court for the Northern District of California, Defendant Richard A. Bergman (“Mr. Bergman”) hereby objects and responds to Lead Plaintiffs’ First Set of Interrogatories set forth below. These supplemental responses and objections are subject to, and without waiver of, the objections and limitations set forth in Mr. Bergman’s Responses and Objections to Plaintiff’s First Set of Interrogatories, dated August 11, 2016.

GENERAL QUALIFICATIONS AND OBJECTIONS

The following general qualifications and objections apply to each of the Interrogatories and, unless otherwise stated, shall have the same force and effect as if set forth in full in response to each of the Interrogatories.

1. Mr. Bergman objects to each Interrogatory and to Plaintiffs’ definitions and instructions to the extent that they seek to impose on Mr. Bergman any discovery obligation greater than or different from those imposed by the Federal Rules of Civil Procedure, by the Local Rules of the United States District Court for the Northern District of California, or by an order entered by the Court in this matter.

2. Mr. Bergman objects to each Interrogatory to the extent that it seeks information that is protected from disclosure by the attorney-client privilege, the work product doctrine, the joint defense privilege, or any other applicable privilege or protection. Mr. Bergman does not intend to waive any applicable privilege or protection and will not disclose any privileged or protected information. In the event Mr. Bergman inadvertently discloses any such information, this disclosure is not intended and shall not be deemed to be a waiver by Mr. Bergman of any privilege or protection. Mr. Bergman reserves the right to demand that Plaintiffs return or destroy any materials containing privileged or protected information that were inadvertently disclosed.

3. Mr. Bergman objects to each Interrogatory on the grounds that it is overbroad, unduly burdensome, irrelevant to the claims and defenses at issue, not proportional to the needs of the case, and not reasonably tailored to adduce evidence that was communicated to the persons who made the statements that Plaintiffs have alleged to be false and misleading. Any

1 purported benefit of providing such information is far outweighed by the resulting burdens on
2 Mr. Bergman.

3 4. Mr. Bergman objects to each Interrogatory on the grounds that it seeks highly
4 sensitive and confidential information of non-parties, the disclosure of which would violate the
5 constitutional, statutory, or common law privacy interests of others who are not parties to this
6 action. Mr. Bergman further objects to the Interrogatories to the extent they seek third-party
7 information that Mr. Bergman is contractually prohibited from producing.

8 5. Mr. Bergman objects to each Interrogatory on the grounds that it seeks
9 proprietary, confidential, private, and/or competitively sensitive information.

10 6. Mr. Bergman objects to each Interrogatory to the extent that it seeks information
11 that is a matter of public record, is equally available to Plaintiffs, or is already in Plaintiffs'
12 possession, custody, or control.

13 7. Mr. Bergman objects to each Interrogatory and to Plaintiffs' definitions and
14 instructions to the extent that they call for information or documents that are not in Mr.
15 Bergman's possession, custody, or control.

16 8. Mr. Bergman objects to each Interrogatory to the extent that it imposes an undue
17 burden upon Mr. Bergman by requesting information the value of which, if any, is substantially
18 outweighed by the burden or cost of searching for and/or compiling it.

19 9. Mr. Bergman objects to each Interrogatory to the extent that it is vague,
20 ambiguous, and unclear, including the use of terms that are not defined and/or not otherwise
21 susceptible to any single meaning.

22 10. Mr. Bergman objects to each Interrogatory on the basis that they seek information
23 that is more readily obtainable by deposition and that Lead Plaintiffs had the opportunity to seek
24 such information by deposition, but elected not to do so.

25 11. Consistent with Fed. R. Civ. P. 33(d), Mr. Bergman objects to each Interrogatory
26 to the extent that it seeks information that can be derived from documents that have already been
27 produced, and where the burden to derive such information is substantially the same for
28 Plaintiffs as it is for Mr. Bergman.

12. The supplemental responses set forth herein are intended to provide, to the best of his present recollection, a general overview of the material bases and documents supporting each identified statement, but are not a comprehensive list of all such information and may be supplemented with additional documents and information at any point, including during trial. These supplemental responses are based on the information available at this time, which may be incomplete, and is given without prejudice to Mr. Bergman's right to add to, modify, or otherwise change or amend the response herein, and/or to correct any inadvertent errors, mistakes, or omissions. Except for explicit facts disclosed herein, no incidental or implied admissions are intended hereby. Mr. Bergman's supplemental responses or objections to the Interrogatories are not an admission of any fact set forth or assumed by the Interrogatory. Mr. Bergman reserves his rights to (a) further object to the Interrogatories or Plaintiffs' definitions and instructions; (b) object to the use or admissibility of any information provided in response to the Interrogatories, for any purpose, in any proceeding in this action or any other action; (c) object on any basis permitted by law to any other discovery request involving or relating to the subject matter of these objections and responses; (d) alter, amend, or supplement his responses to the Interrogatories; and (e) use or rely on, at any time, including trial, subsequently discovered information or information omitted from Mr. Bergman's objections and responses as a result of mistake, error, oversight or inadvertence.

OBJECTIONS TO DEFINITIONS

1. Mr. Bergman objects to the definition of "AMD" on the grounds that it is overly broad and unduly burdensome; encompasses information that is protected by the attorney-client privilege, the attorney work-product doctrine, or any other lawfully recognized privilege or immunity from disclosure; and/or purports to impose obligations greater than those set forth in the Federal Rules of Civil Procedure. Mr. Bergman will understand "AMD" to refer to Advanced Micro Devices, Inc. and no other person or entity.

2. Mr. Bergman objects to the definition of "Llano" on the grounds that it is overly broad and unduly burdensome.

3. Mr. Bergman objects to the definition of “You” and “Your” on the grounds that they are overly broad, unduly burdensome, and encompass information that is protected by the attorney-client privilege, the attorney work product doctrine, or any other lawfully recognized privilege or immunity from disclosure. Mr. Bergman will understand the definition of the terms “You” and “Your” to refer only to himself.

OBJECTIONS TO INSTRUCTIONS

1. Mr. Bergman objects to Instruction No. 1 on the grounds that the proposed “Relevant Period” of January 1, 2010 through October 1, 2013 is overly broad, unduly burdensome, and not proportional to the needs of the case. Under Magistrate Judge Corley’s November 16, 2015 Order, the relevant discovery period begins on April 1, 2010. (Dkt. No. 162). Mr. Bergman left AMD on September 22, 2011. Therefore, Mr. Bergman will consider the “Relevant Period” for these Interrogatories to be April 1, 2010 through September 22, 2011.

2. Mr. Bergman objects to Instruction No. 2 as overly broad and unduly burdensome, and insofar as it calls for the provision of information that is subject to the attorney-client privilege, attorney work product protection, contractual confidentiality obligations, or any other lawful basis for protection from disclosure.

SUPPLEMENTAL OBJECTIONS & RESPONSES TO INTERROGATORIES

INTERROGATORY NO. 1:

Identify and describe with specificity all facts and identify all documents supporting Your statements on April 21, 2011, that:

- a) “the volume is actually coming in Q2. So, that’s certainly when we expect to ramp to production and have platforms launch on Llano,” and that
- b) “we’re well positioned to take advantage of that cycle.” *See* Complaint ¶ 162.

RESPONSE TO INTERROGATORY NO. 1:

Mr. Bergman incorporates by reference each of the above General Objections as if fully set forth in this response. Mr. Bergman specifically objects that this Interrogatory is overbroad, unduly burdensome, and oppressive because it seeks information not proportional to the needs of the case. Mr. Bergman further objects that this Interrogatory calls for proprietary, confidential,

private, and/or competitively sensitive information, including confidential information of non-parties. Mr. Bergman further objects to this Interrogatory to the extent it calls for non-party information that Mr. Bergman is contractually prohibited from producing. Mr. Bergman further objects to this Interrogatory to the extent it seeks information protected by the attorney client privilege, attorney work product, or any other applicable privileges, protections, or immunities.

Subject to and without waiving the foregoing Specific and General Objections, Mr. Bergman responds as follows: Mr. Bergman's April 21, 2011 statements were forward-looking statements informed by his education, prior industry experience, and understanding of AMD's business and operations at that time. In addition, certain of Mr. Bergman's April 21, 2011 statements were statements of corporate optimism based on subjective impressions and conveyed at a level of generality that precludes them from being objectively true or false. Based on Mr. Bergman's deposition testimony and the documents AMD has produced to date in this action, the burden of deriving information sought in this Interrogatory is substantially the same for Mr. Bergman as it is for Plaintiffs. *See* Fed. R. Civ. P. 33(d).

In addition, Mr. Bergman supplements his responses as follows: Llano yield had improved steadily during the months leading up to Mr. Bergman's April 21, 2011 statements. When semiconductor companies, like AMD, work to commercialize cutting-edge processes and technology, like Llano, fluctuations in yields are common. *See* Rebuttal Expert Report of Dr. Kenneth P. Lisiak (hereinafter referred to as "Lisiak Report") ¶¶ 23, 31-34, 37, 65; *see also* AMD-015-001666923.

Beginning in November 2010, Llano yields began to improve and Mr. Bergman understood that AMD team in Dresden that was overseeing GlobalFoundries' production of Llano had "growing confidence" that GlobalFoundries "seems to be getting their mojo back." AMD-015-001652588. By early January 2011, more positive news from GlobalFoundries about yield led Mr. Bergman to tell colleagues that "we are rolling towards major Q2 volumes again." AMD-015-001677487. Later that month, Bergman received a report that GlobalFoundries "has eliminated the major system challenges that were killing the 32nm [which included Llano] yields and preventing normal new process learning" and that GlobalFoundries was "now moving up the

yield curve aggressively.” AMD-020-002069762. A presentation Mr. Bergman’s group made to AMD’s Board of Directors in January 2011 noted that “Llano momentum [is] building as positive 32-nm yield trend continues and a new aggressive business plan takes shape. . . . The Sabine notebook platform launch slated for June/July has been expanded to include all the mainstream products, which should lead to a much greater availability of platforms at launch and a large uptick in Q2 Llano volume.” AMD-015-001664253. Llano yield continued to improve over the next several weeks, and on March 8, 2011, AMD’s Chief Financial Officer and interim Chief Executive Officer noted that GlobalFoundries had made “[g]reat progress” on Llano’s yield and indicated that he believed they could move on developing the next process technology. *See* AMD-016-001919489 (“now on to 28[nm]”). Likewise, on March 17, 2011, Mr. Bergman received an email from John Docherty, AMD’s Senior Vice President of Manufacturing Operations, which indicated that “[f]rom a technology perspective, 32nm is virtually done.” AMD-020-002112696. During March 2011, “[a] number of new records [for Llano yields] were set” and Llano yield was precisely on target with AMD’s yield goals. *See, e.g.*, AMD-010-001547986; AMD-016-001919532; AMD-016-001919534; AMD-003-000018218; Lisiak Report ¶¶76-78.

In early April 2011, AMD began shipping Llano to customers. AMD-003-000424158; AMD-003-000424159; AMD-003-000424160. With yield on target and at healthy levels, Mr. Bergman and AMD expected Llano’s “production [to] move [] into full swing in Q2 with a June 14th global launch and a plan to revenue 1.7 Mu notebook units.” AMD-003-000432492. On April 19, 2011 – two days before Mr. Bergman’s April 21, 2011 statements – Mr. Bergman inquired of one of his most senior direct reports to “determine if we have supply limitations that may help or hurt the Q2 projections” and was told that there were a variety of estimates, based on different assumptions, all of which projected AMD to ship well in excess of one million Llano units in the second quarter of 2011. AMD-003-000404770; AMD-015-001664253.

Mr. Bergman’s statement that AMD was “well positioned” was a general statement of corporate optimism based on subjective impressions, and was conveyed at a level of generality that precludes it from being objectively true or false. However, as the remainder of Mr.

Bergman's April 21, 2011 comments make clear, Mr. Bergman was referring to OEM customers, not channel customers. *See* April 21, 2011, AMD Q1'2011 Conference Call Transcript). ("[O]ur key for Llano is to hit the critical cycle in the industry, which is BTSC, or the back-to-school cycle [s]o we have broad-based OEM platform adoption for that timeframe"). The "back-to-school" season is not a significant selling season for channel customers. Cloran Dep. Tr. 47:9-13 ("the Channel didn't really have any cycles . . . [2c] referred mainly to the MNCs [multinational corporations] and the selling cycle for them"); Grasby Dep. Tr. 79:11-14 ("Q. Did you ever deal with back-to-school sales with your customers? A. Back-to-school sales would be discussed, but it was a tiny fraction of our business.").

Although AMD anticipated selling only 30,000 units of Llano to channel customers during the second quarter of 2011, *see* AMD-003-000269758, it shipped more than 61,000 units of Llano to channel customers that quarter. *See* AMD-28-002325474; *see also* AMD-016-001930374 at 375 (reflecting roughly 70,000 units of desktop Llano sales, representing approximately 61,000 to channel customers and 9,000 to OEM customers). Market participants understood that major volumes of Llano were expected to be shipped to channel customers during the third quarter. *See* AMD-021-002261371 at 1373 (April 8, 2011 Longbow Research note: "AMD Llano (mainstream) APU expected to account for a small share of AMD-based desktop builds in 2Q; contacts note that most PC ODMs are still in the product design and testing phase. Major volume expected to begin in 3Q with orders solidifying after Computex."); *see also* AMD-021-002244755 at 4756 (May 17, 2011 Avian report: "[w]e continue to wait for Llano based sku's to appear in the channel with Brazos only evident thus far.").

With respect to OEM customers, Mr. Bergman explained to AMD's Board of Directors shortly before his April 21, 2011 statements that "Llano [is] gaining momentum toward a notebook launch in June and desktop launch in July" and that AMD had "[g]reater than 100 Client-wide Llano OEM design wins in various stages of charter and development, with 26 notebook platforms trending towards launch availability." AMD-003-000431961; *see also* AMD-003-000078182 (email to Mr. Bergman noting that Asia OEMs "will be selling A-Series [Llano]-based notebooks by June 1st" and that the OEM team is "confident platforms will be

publicly available in meaningful quantities.”). Combined with the strong progress on Llano yields, this was among the types of information that led Mr. Bergman to believe that AMD was “well-positioned” to take advantage of the back-to-school cycle for Llano.

INTERROGATORY NO. 2:

Identify and describe with specificity all facts and identify all documents supporting Your statements on April 21, 2011, that “So as we go forward, no big change to our roadmap to announce typically . . . we’re well-positioned there.” *See* Complaint ¶ 192.

RESPONSE TO INTERROGATORY NO. 2:

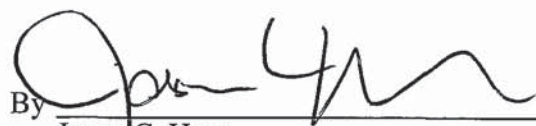
Mr. Bergman incorporates by reference each of the above General Objections as if fully set forth in this response. Mr. Bergman specifically objects that this Interrogatory is overbroad, unduly burdensome, and oppressive because it seeks information not proportional to the needs of the case. Mr. Bergman further objects that this Interrogatory calls for proprietary, confidential, private, and/or competitively sensitive information, including confidential information of non-parties. Mr. Bergman further objects to this Interrogatory to the extent it calls for non-party information that Mr. Bergman is contractually prohibited from producing. Mr. Bergman further objects to this Interrogatory to the extent it seeks information protected by the attorney client privilege, attorney work product, or any other applicable privileges, protections, or immunities.

Subject to and without waiving the foregoing Specific and General Objections, Mr. Bergman responds as follows: Mr. Bergman’s April 21, 2011 statements were forward-looking statements informed by his education, prior industry experience, and understanding of AMD’s business and operations at that time. Based on Mr. Bergman’s deposition testimony and the documents AMD has produced to date in this action, the burden of deriving information sought in this Interrogatory is substantially the same for Mr. Bergman as it is for Plaintiffs. *See* Fed. R. Civ. P. 33(d). Because Lead Plaintiffs do not allege this statement to be false or misleading in their responses to AMD’s interrogatories, no further response is required. *See* Lead Plaintiffs’ Second Supplemental Responses to Defendant AMD’s First Set of Interrogatories, dated November 28, 2016.

1 Dated: January 27, 2017

Respectfully submitted,

2 LATHAM & WATKINS LLP

3
4 By 
5 Jason C. Hegt
6 Attorneys for Defendants

VERIFICATION

I, Richard A. Bergman, a defendant in the above-captioned action, state that I have read the within and foregoing Responses and Objections to Lead Plaintiffs' First Set of Interrogatories. These responses were prepared by counsel with the advice and assistance of AMD and based upon numerous sources not necessarily within my personal knowledge at the present time. Subject to inadvertent or undiscovered errors, the Responses and Objections set forth above are based on and therefore necessarily limited by the records and information still in existence, presently recollected, and thus far discovered in the course of the preparation of these Responses and Objections. Subject to these limitations, the Responses and Objections are true to the best of my present knowledge, information, and belief. I declare under penalty of perjury under the laws of the United States that the foregoing is true and correct.

Executed this 24th day of January, 2017 at San Jose, California.

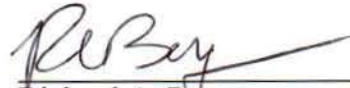

Richard A. Bergman

Exhibit 68

PC Component Channel Pricing Daily

AVIANSecurities, LLC

"Research for intelligent investing"

Wednesday, July 06, 2011

Note: see disclosure on last page of this document.

Avi Cohen

Research Director

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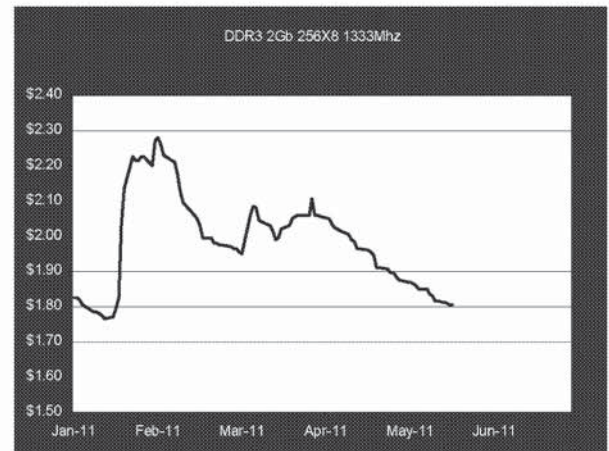
New York, NY 10005

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Watts: (800) 683-0333

Fax: (212) 232-0222

Web: www.aviansecurities.com



Daily Memory Commentary

DRAM spot pricing was down overnight**DDR3 - (Commodity -NB/DT)**

2Gb DDR3 256Mx8 1333MHz: down -\$0.02 to \$1.44. W/W -4.00% M/M -15.54%

1Gb DDR3 128Mx8 1333MHz: down -\$0.01 to \$0.93. W/W -1.75% M/M -8.20%

1Gb DDR3 128Mx8 1066MHz: down -\$0.01 to \$0.93. W/W -1.75% M/M -8.20%

DDR2 - (Legacy/Specialty)

1Gb DDR2 128Mx8 800MHz: up \$0.02 to \$1.08. W/W 2.38% M/M -7.73%

512Mb DDR2 64Mx8 667MHz: flat at \$0.97. W/W 2.12% M/M -5.85%

NAND spot pricing was down overnight**SLC - (Enterprise)**

16Gb SLC: flat at \$14.50. W/W -5.75% M/M -12.36%

8Gb SLC: down \$0.00 to \$7.38. W/W -4.28% M/M -5.93%

MLC - (Embedded/Consumer SSD)

128Gb MLC: down -\$0.19 to \$19.65. W/W -2.88% M/M -21.17%

64Gb MLC: up \$0.00 to \$7.85. W/W -1.88% M/M -14.80%

32Gb MLC: down \$0.00 to \$3.76. W/W -0.92% M/M -3.47%

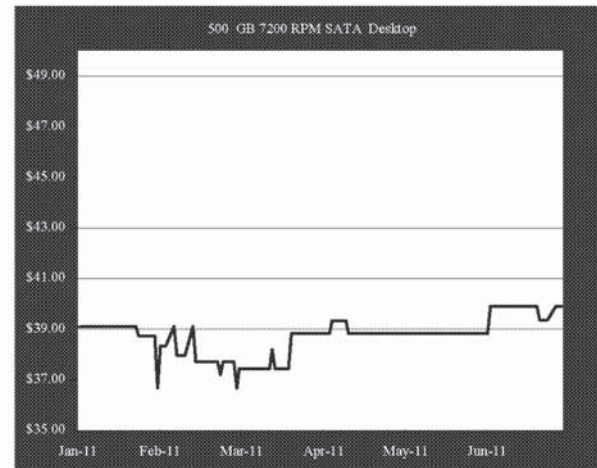
16Gb MLC: down -\$0.02 to \$2.87. W/W -3.70% M/M -8.47%

8Gb MLC: down -\$0.01 to \$3.93. W/W -4.85% M/M -14.67%

TLC - (Retail/USB/Card)

64Gb TLC: flat at \$7.61. W/W -1.23% M/M -5.23%

32Gb TLC: flat at \$3.94. W/W -0.63% M/M -4.95%



Today's Highlights

Please see pages 3 - 5 for Processor Pricing. Please see pages 6 - 8 for HDD processing.

Weekly Processor, notebook, and tablet commentary:

Continues on page 2...

Wednesday, July 06, 2011

Note: see disclosure on last page of this document.

...continued from page 1

Intel inventories and prices within US distribution were flat w/w. AMD inventory declined meaningfully as price cuts last week appear to have spurred some sales prior to Llano. While we still have some concerns around AMD inventory levels, at this point they appear to be on the right track. Intel inventory in the channel remains healthy in our view.

Notebook inventory increased again week over week as we expected. In our opinion the channel is adding inventory prior to back to school and at this point we're not concerned. We would point out that the average price point per system remains above \$950 as distribution continues to focus on higher end models with more expensive processors (i5+) versus lower end (i3) or netbooks. AMD did release their new Llano products and several manufactures have announced support, however we've not yet seen the products arrive in the channel. As an example HP launched 11 new AMD Llano models online with price points starting at \$649 for a Quad Core APU, DX11 graphics and 6GB of DDR3 RAM. We view the price point as competitive as compared to a similar system built with an Intel i5 chipset which is priced at \$749. We view this an incremental positive for AMD and think that their lower processor price will help drive market share gains.

Tablet inventory more than doubled over the weekend as HP filled the channel with 32GB (\$599 price point) TouchPads. While we expected to see an increase, we were surprised to see this much inventory arrive at once versus a more controlled step by step approach. Several component companies will benefit from HP's initial channel fill, most notably SNDK (flash storage) and QCOM (processor). We view the rather aggressive fill as overly optimistic and feel that this device will only add to the surplus inventory moving into the 2H of the year. We would certainly expect HP to cut prices to help compete against the iPad2 as reviews thus far have been more negative than positive with only a couple hundred apps available for download and "buggy" performance.

Nanya reports June sales number: revenue dips 20% M/M

Nanya reported June sales on Sunday night with revenue down 20% m/m. In our conversation with them last night they advised that the sequential decrease was due to a mix of reduced shipments and lower ASP. Shipments were down 13% m/m while ASP declined 9% m/m. Further they went on to say that inventory was up an additional 3 weeks exiting June as more of their DRAM product was produced at 4xnm vs. 5xnm, adding additional supply.

Lastly, they're not optimistic about pricing going in July as channel inventory remains above normal and PC builds appear to be slowing. We view further price declines throughout the month of July with possible stability in August as lower module cost could spur increased content per box in mature markets.

HTCH Details FQ3 Upside

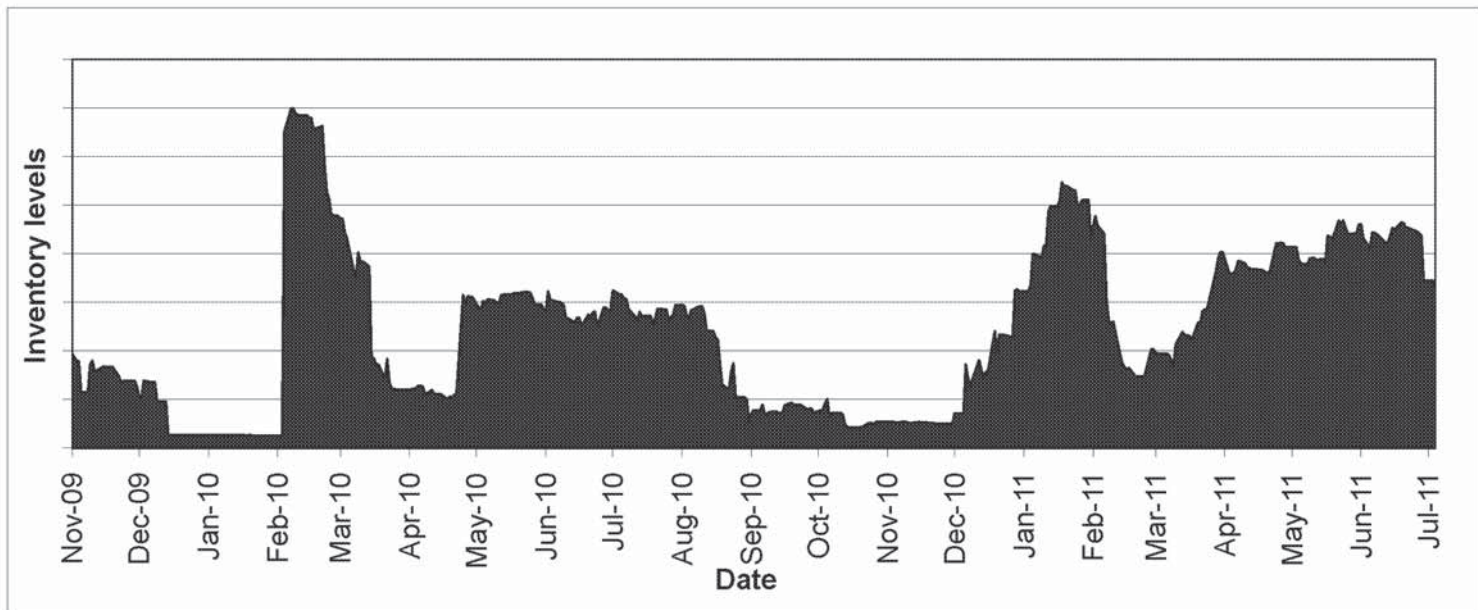
HTCH provided further details around its preannounced upside for the June quarter this morning. The company announced shipments for FQ3 lifted 15% Q/Q to 118M assemblies, yielding revenues of \$72M. This result compares with prior guidance of flat and suggests HTCH shipments accelerated with HTCH shipping approximately 12.5M suspensions per week over the last two weeks of the quarter.

In addition, HTCH noted that it has been shipping ~10M units per week and it expects to continue this pace into the September quarter. Assuming this pace is sustainable, HTCH would be on track for an increase of about 10% Q/Q, slightly better than our forecast for industry growth Q/Q.

We see these results and HTCH's preliminary forecast as a very positive sign for HTCH with volumes in excess of our expectations not only benefitting the sales line, but also most likely having very positive implications for GMs and net margins given the underutilized state of HTCH's facilities. Finally, we also view results as a positive sign for volumes at HTCH's most substantial customer, WDC. We are positive on both HTCH and WDC.

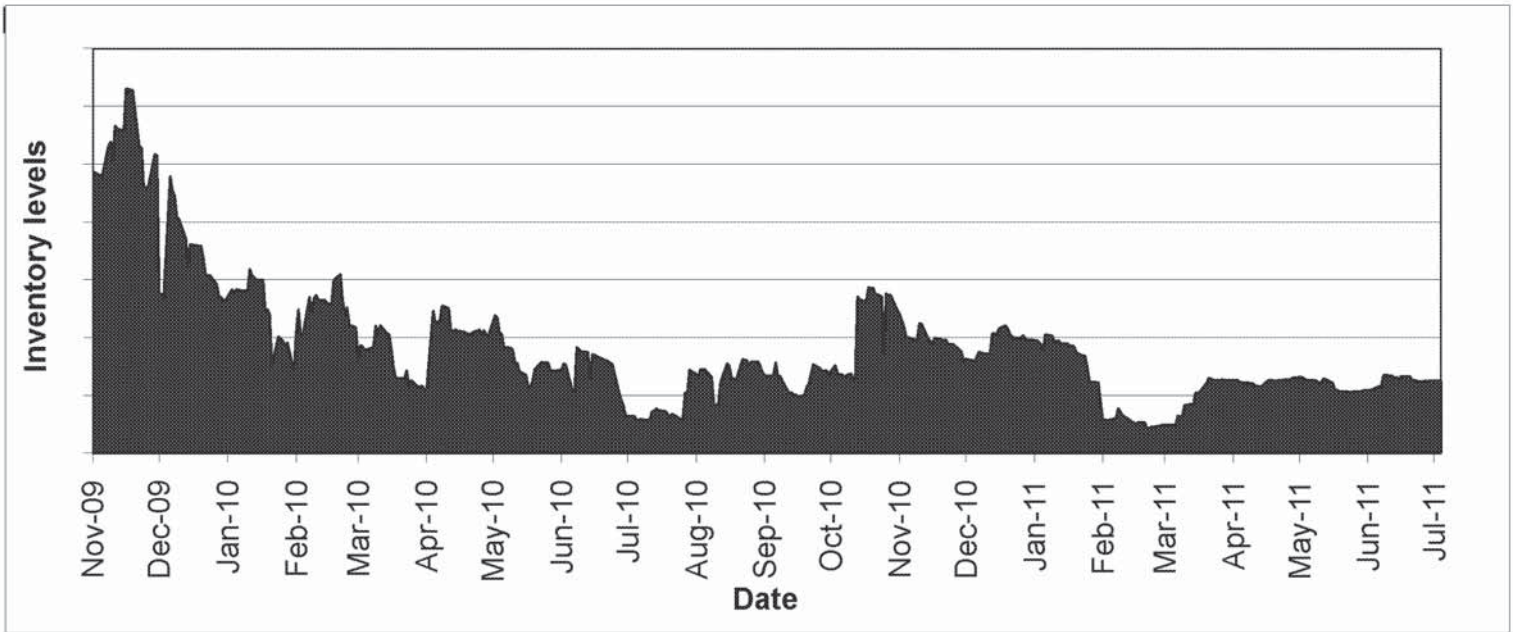
AMD Processor Survey

Processor	Today's Price	Pricing M/M Δ	Q/Q Δ	Inventory M/M Δ	Q/Q Δ
Athlon 64 X2 3500+ 2.2 GHz	\$49.70	0%	0%	↓	↓
Athlon 64 X2 3800+ 2.0 GHz	\$68.04	0%	0%	↓	↓
Athlon 64 X2 3800+ 2.4 GHz	\$57.42	0%	0%	↓	↓
Athlon 64 X2 4200+ 2.2 GHz	\$71.68	0%	0%	↓	↓
Athlon 64 X2 4200+ 2.6 GHz	\$76.63	0%	0%	↓	↓
Athlon 64 X2 4600+ 2.4 GHz	\$92.40	0%	0%	↓	↓
Athlon 64 X2 5000+ 2.6 GHz	\$83.76	0%	0%	↓	↓
Athlon 64 X2 5400+ 2.8 GHz	\$74.03	0%	0%	↓	↓
Athlon 64 X2 5600+ 2.8 GHz	\$94.44	0%	0%	↓	↓
Athlon 64 X2 6000+ 3.0 GHz	\$94.26	0%	0%	↓	↓
Athlon 64 X2 6400+ 3.2 GHz	\$169.59	0%	0%	↓	↓
Athlon 64 X2 5200+ 2.8 GHz Black Edition	\$57.38	0%	0%	↓	↓



Intel Processor Survey

Processor	Today's Price	Pricing M/M Δ	Q/Q Δ	Inventory	
				M/M Δ	Q/Q Δ
Celeron D 347 3.06GHz	\$38.82	0%	0%	↓	↓
Celeron D 352 3.2GHz	\$54.79	0%	0%	↓	↓
Celeron D 360 3.2GHz	\$63.67	0%	0%	↓	↓
Pentium 4 630 3.0 GHz	\$77.68	0%	0%	↓	↓
Pentium 4 631 3.0 GHz	\$122.15	0%	0%	↓	↓
Pentium 4 640 3.2GHz	\$78.20	0%	0%	↓	↓
Pentium E5200 Dual Core 2.5GHz	\$65.00	0%	0%	↓	↓
Core i7-920 2.66GHz	\$296.01	0%	0%	↓	↓
Core 2 Duo E4300	\$127.53	0%	0%	↓	↓
Core 2 Duo E6400	\$201.46	0%	0%	↓	↓
Core 2 Duo E6600	\$241.59	0%	0%	↓	↓
Core 2 Duo E6700	\$338.62	0%	0%	↓	↓
Core 2 Duo E7400 2.8GHz	\$116.53	0%	0%	↓	↓
Core 2 Duo E8400 3.0GHz	\$172.73	0%	0%	↓	↓
Core Duo T2600	\$432.81	0%	0%	↓	↓
Core 2 Duo T5600	\$121.94	0%	0%	↓	↓
Core 2 Duo T7200	\$299.65	0%	0%	↓	↓
Core 2 Duo T7600	\$646.07	0%	0%	↓	↓
Core 2 Quad Q6600 2.4GHz	\$199.33	0%	0%	↓	↓
Core 2 Quad Q8200 2.33GHz	\$175.74	0%	0%	↓	↓
Core 2 Quad Q9550 2.83GHz	\$276.93	0%	0%	↓	↓
Core 2 Duo E7500 2.93GHz	\$121.16	0%	0%	↑	↑
Core 2 Duo E7600 3.06GHz (1066MHz)	\$141.79	0%	0%	↑	↓
Quad-Core Xeon E5520 2.26 GHz	\$385.47	0%	0%	↓	↓



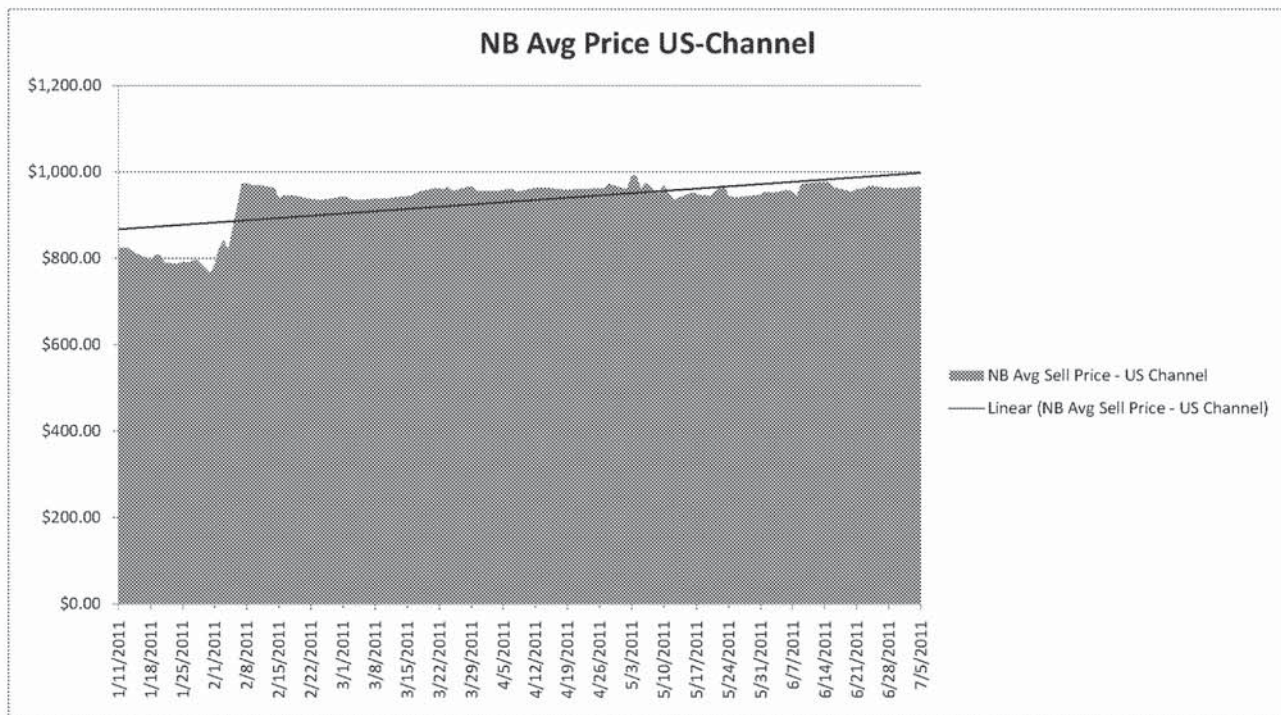
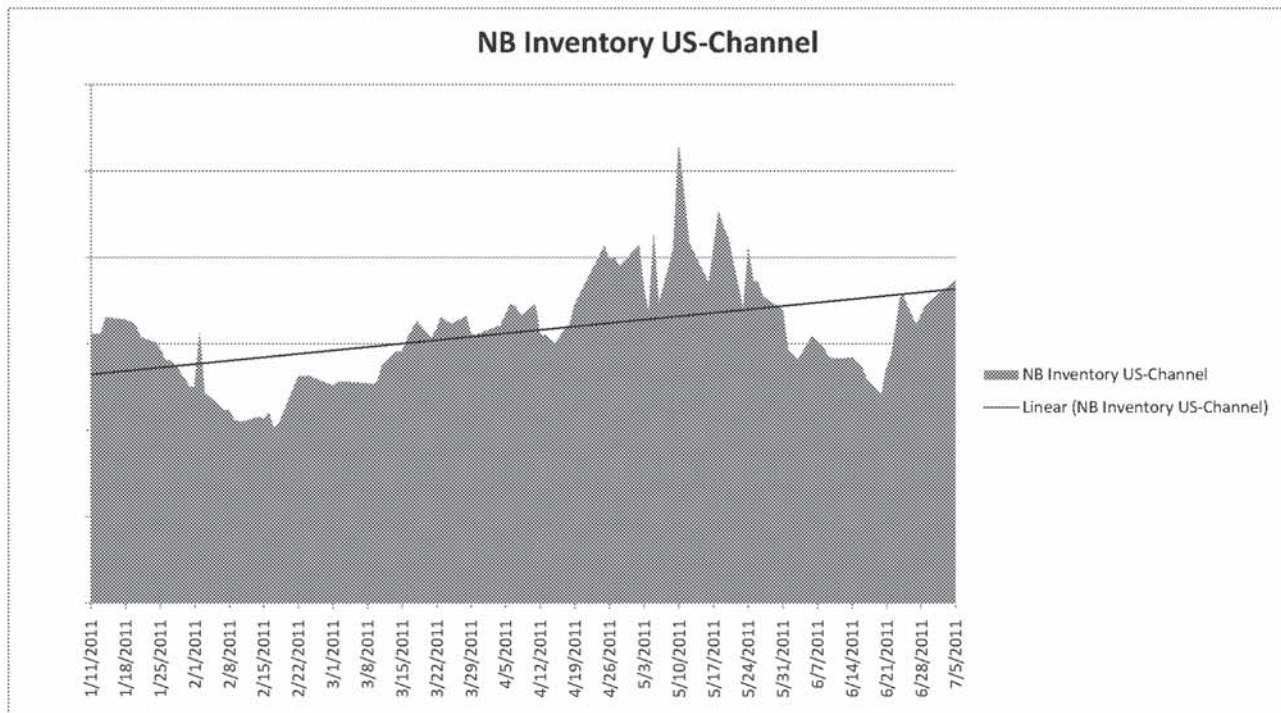
Channel Notebook Inventory & Average System Price

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Tuesday, July 05, 2011

Note: see disclosure on last page of this document.



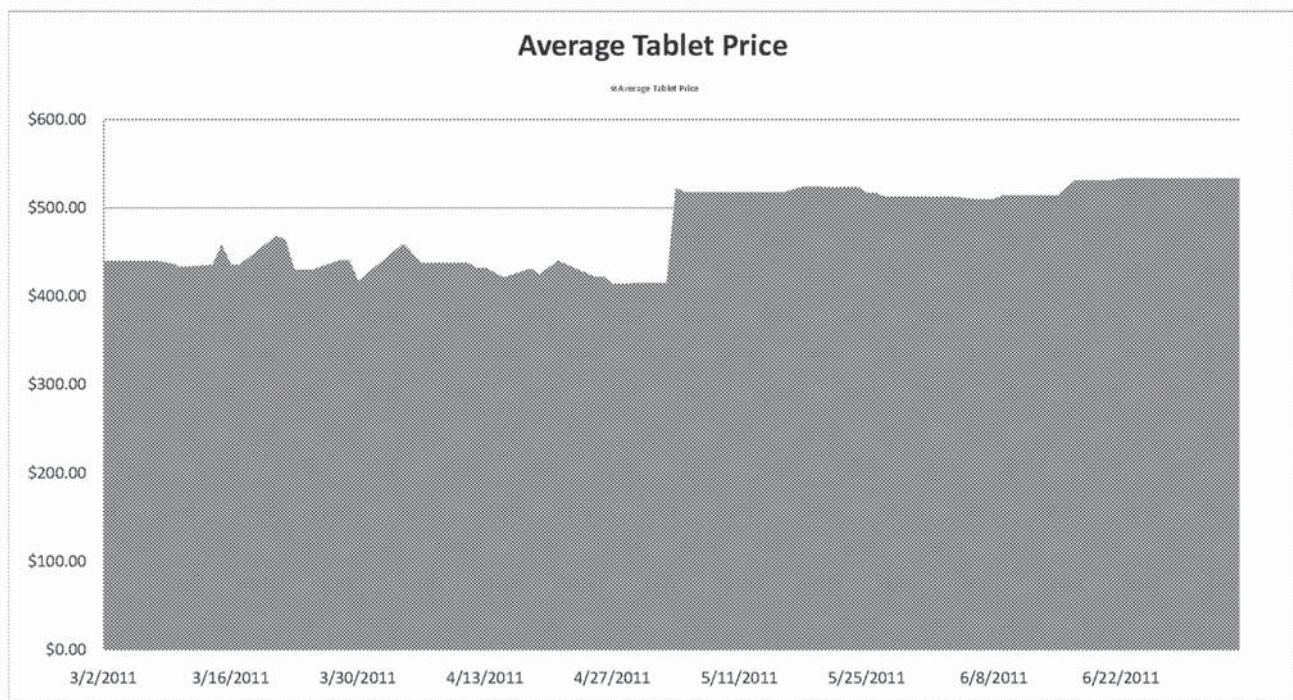
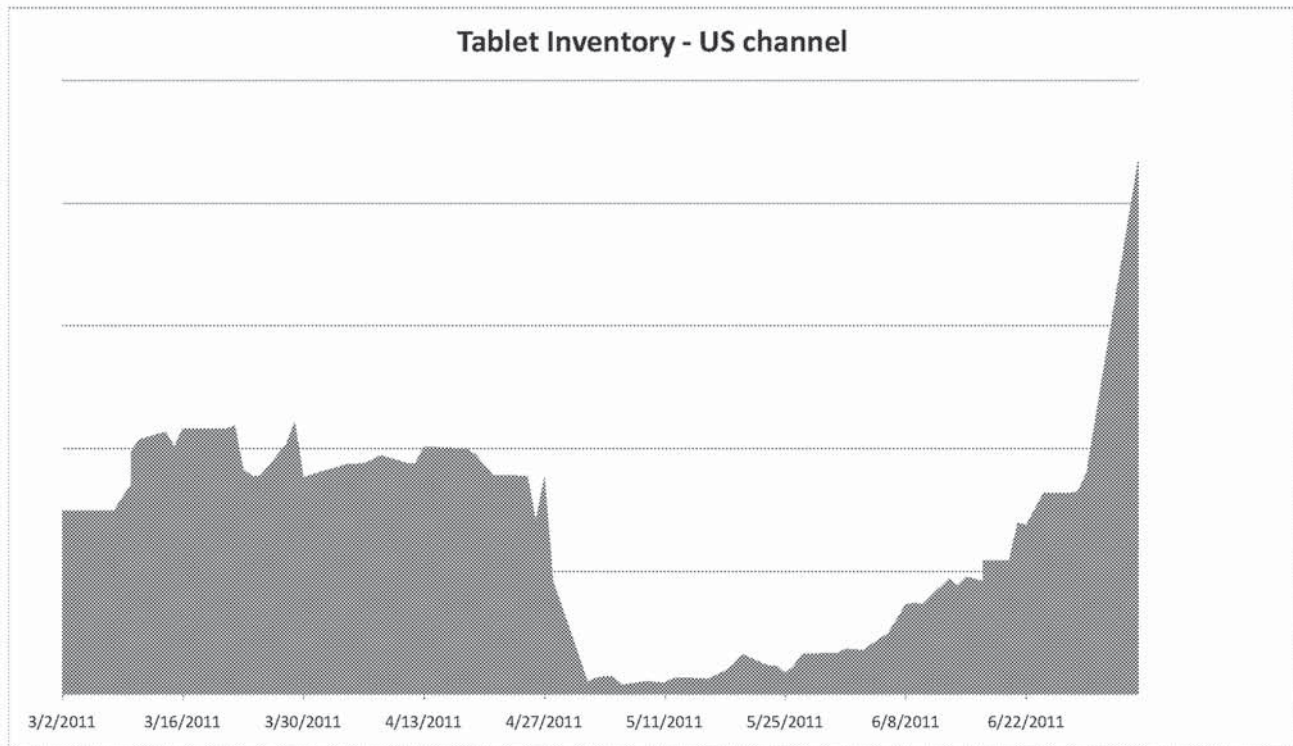
Tablet Inventory & Average Price - US Channel

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Weekly Drive Commentary



Wednesday, July 06, 2011

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Commentary

HDD Pricing in the US channel continued to hold stable at Q end. As we noted last week we view a lack of pricing pressure at the end of June as a particularly positive sign, given the contrast with normal end of June price actions. Typically, the end of June is marked by severe price erosion as drive manufacturers cut deals with customers to take extra volume as they struggle to meet revenue targets. This quarter, however, it rather appears that drive vendors held pricing while allowing inventory in the channel to work itself downwards (see our inventory chart on page 2). We see the drivemakers' quarter end restraint as just another reason to believe that STX and WDC handily exceeded estimates in June.

A recent competitor's report suggested channel pricing was weak through Q2 with weak pricing having negative connotations for the drive industry. We again believe the exact opposite was the case as channel pricing spiked in the late March and early April time frame with the shifts in pricing still having not reversed. Our point is illustrated below in our pricing data (a combo of US broker and tier 2 OEM direct pricing) which shows 1) Average prices paid for drives in Q2 lifted 5% – 16% in what we consider mainstream SKUs, and 2) Final pricing for the quarter was still 3% - 16% higher than March lows in the same mainstream SKUs. In turn, given in our view this sustained improvement in channel pricing should have added at least 200- 300 bps to GMs during the quarter, offsetting at least a portion if not the entirety of the impact of lower pricing on Tier 1 OEM contracts. And as we noted last week, better channel pricing appears to have positively influenced Q3 Tier 1 OEM contract with our checks suggesting 2.5" pricing for the coming quarter has been set flat to modestly up Q/Q.

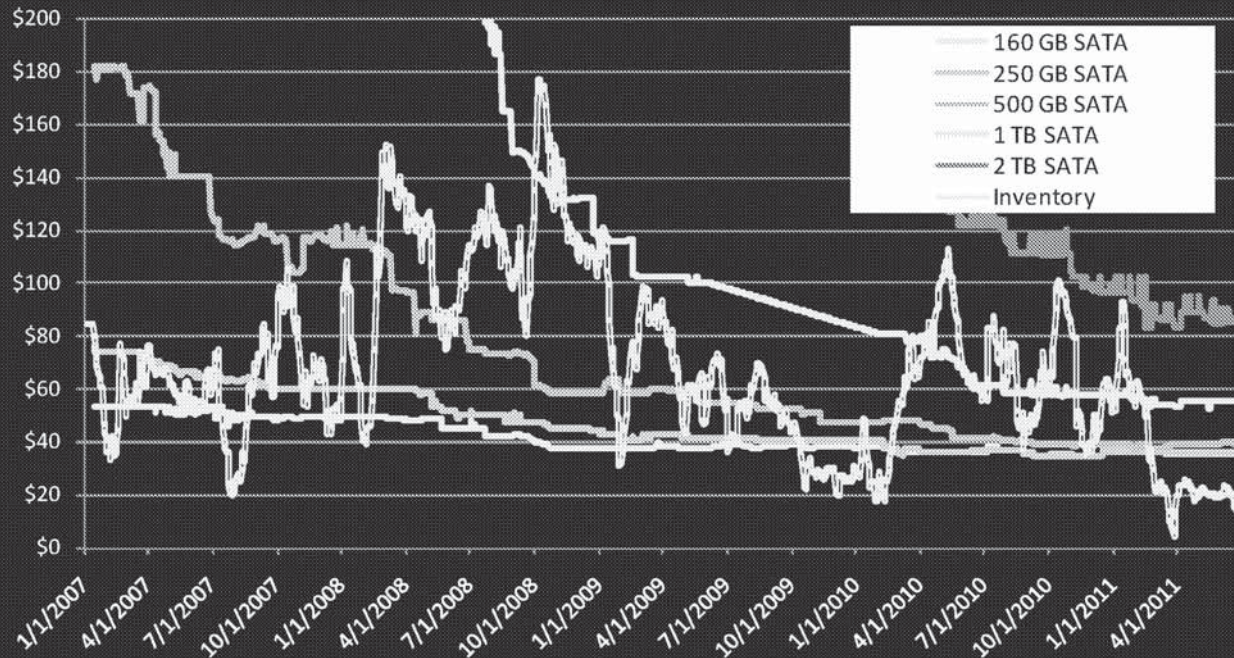
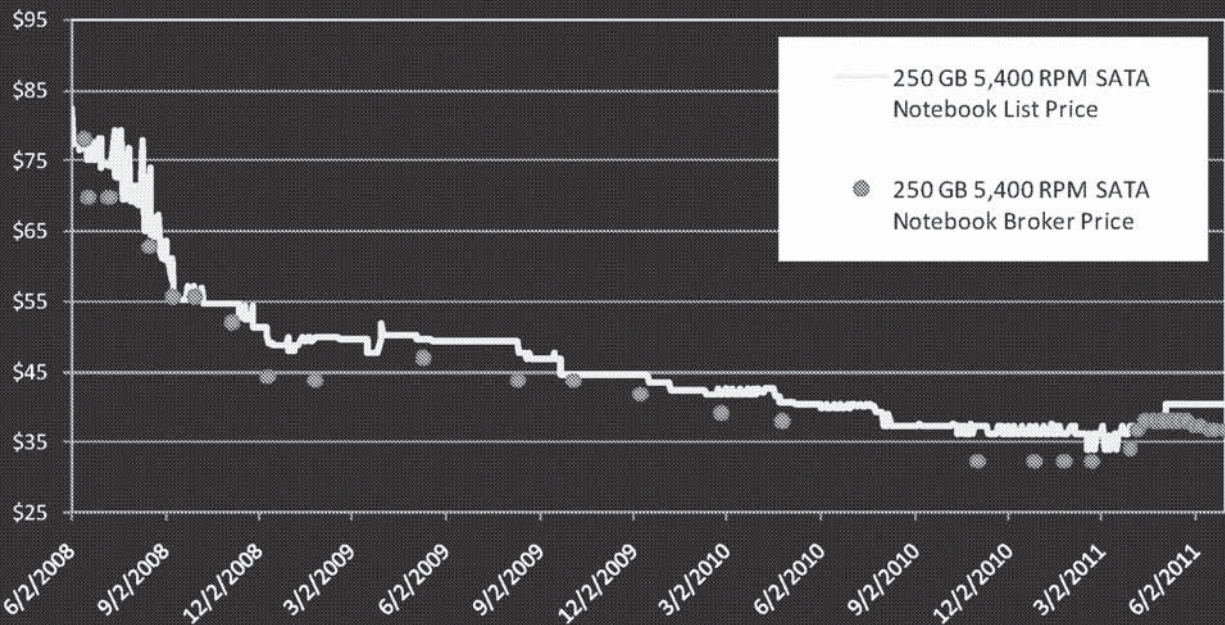
US Channel HDD Pricing

	CQ2'11 Final	CQ1'11 Lows	Price Change	CQ2'11 Average	CQ1'11 Average	Price Change
2.5" SATA						
160G	\$34.50	\$29.00	19%	\$34.73	\$30.08	15%
250G	\$37.00	\$32.00	16%	\$37.62	\$32.29	16%
320G	\$38.00	\$34.00	12%	\$38.62	\$34.33	12%
500G	\$48.00	\$45.50	5%	\$49.27	\$45.58	8%
750G	\$65.00	\$68.00	-4%	\$68.08	\$72.83	-7%
1TB	\$86.00	\$79.00	9%	\$83.08	\$83.25	0%
3.5" SATA						
250G	\$34.00	\$31.50	8%	\$34.31	\$31.75	8%
500G	\$36.00	\$33.50	7%	\$36.15	\$33.58	8%
1TB	\$48.50	\$47.00	3%	\$49.35	\$47.00	5%
1.5TB	\$63.00	\$62.00	2%	\$49.42	\$47.08	5%
2TB	\$96.00	\$80.00	20%	\$63.00	\$62.75	0%
3TB	\$162.00	\$180.00	-10%	\$97.38	\$83.67	16%

Weekly Drive Commentary
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Wednesday, July 06, 2011

Note: See Disclosures on the last pages of this document

Desktop HDD Pricing and Inventories**250 GB 2.5" HDD Pricing**

Weekly Drive Commentary

Wednesday, July 06, 2011

Note: See Disclosures on the last pages of this document

Desktop Drives

Drive Configuration	Distribution Pricing				
	Today	W/W	M/M	Q/Q	Y/Y
160 GB SATA	\$35.69	0.0%	0.0%	0.0%	-0.9%
250 GB SATA	\$36.13	0.0%	0.0%	0.0%	-1.1%
500 GB SATA	\$39.90	1.4%	2.8%	2.8%	-3.6%
1 TB SATA	\$55.87	0.0%	0.0%	5.4%	-8.8%
1.5 TB SATA	\$69.23	0.0%	0.0%	3.3%	NA
2 TB SATA	\$85.69	0.2%	-5.5%	3.2%	NA

Notebook Drives

Drive Configuration	Distribution Pricing				
	Today	W/W	M/M	Q/Q	Y/Y
80 GB 5400 RPM SATA	\$36.35	0.0%	0.0%	0.0%	3.0%
160 GB 5400 RPM SATA	\$37.64	0.0%	0.0%	2.9%	-2.9%
250 GB 5400 RPM SATA	\$40.50	0.0%	0.0%	7.8%	1.3%
320 GB 5400 RPM SATA	\$43.10	0.0%	0.1%	-0.2%	-8.7%
500 GB 5400 RPM SATA	\$52.69	0.0%	-2.2%	-3.7%	NA
640 GB 5400 RPM SATA	\$70.72	0.0%	0.0%	5.0%	NA
160 GB 7200 RPM SATA	\$42.74	0.9%	2.6%	2.6%	4.3%
250 GB 7200 RPM SATA	\$45.57	-0.3%	0.0%	8.2%	5.9%
320 GB 7200 RPM SATA	\$50.66	0.0%	0.0%	0.0%	NA
500 GB 7200 RPM SATA	\$63.57	0.0%	0.8%	1.7%	NA

PC Component Channel Pricing Daily

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Wednesday, July 06, 2011

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Memory Survey

DRAM Spot Prices

DRAM	Today	W/W Δ	Pricing M/M Δ	Q/Q Δ	Y/Y Δ
DDR3 2Gb 256Mx8 1333MHz	\$1.44	-4.00%	-16%	-30%	#DIV/0!
DDR3 1Gb 128Mx8 1333MHz	\$0.95	-1.75%	-8.20%	-18.84%	-63.62%
DDR3 1Gb 128Mx8 1066MHz	\$0.93	-1.75%	-8.20%	-18.84%	-63.40%
DDR2 1Gb 128Mx8 800MHz	\$1.05	2.38%	-7.73%	-22.35%	-50.56%
DDR2 1Gb 128Mx8 667MHz	\$1.05	0.5%	-10.3%	-24.5%	-52.9%
DDR2 512Mb 64Mx8 667MHz	\$0.97	2.1%	-5.9%	-9.8%	-33.9%
DDR 512Mb 64Mx8 400MHz	\$1.22	-0.4%	-8.5%	-15.9%	-39.0%
DDR 256Mb 32Mx8 400MHz	\$0.97	0.0%	-7.0%	-11.6%	-30.7%
DDR 256Mb 16Mx16 400MHz	\$0.93	0.0%	-8.8%	-13.1%	-33.6%

NAND Spot Prices

NAND Configuration	Today	W/W Δ	Pricing M/M Δ	Q/Q Δ	Y/Y Δ
NAND 128Gb MLC	\$19.65	-2.85%	-21.17%	-25.02%	-34.36%
NAND 64Gb MLC	\$7.85	-2%	-15%	-27%	-45%
NAND 64Gb TLC	\$7.61	-1%	-5%	-8%	-37%
NAND 32Gb MLC	\$3.76	-0.9%	-3.5%	-29.2%	-45.5%
NAND 32Gb TLC	\$3.94	0.6%	-5.0%	-14.4%	-43.0%
NAND 16Gb SLC	\$14.50	-5.8%	-12.4%	-19.3%	19.2%
NAND 16Gb MLC	\$2.87	-3.7%	-8.5%	-27.5%	-34.8%
NAND 8Gb SLC	\$7.38	-4.3%	-5.9%	-34.5%	19.4%
NAND 8Gb MLC	\$3.93	-4.6%	-14.7%	-17.6%	4.7%
NAND 4Gb SLC	\$3.61	-2.2%	-3.7%	-13.3%	2.1%
NAND 4Gb MLC	\$2.73	0.0%	-0.9%	-7.6%	-9.9%

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Exhibit 69

**UNITED STATES
SECURITIES AND EXCHANGE COMMISSION**
Washington, D.C. 20549

FORM 8-K

CURRENT REPORT

Pursuant to Section 13 or 15(d) of the
Securities Exchange Act of 1934

April 21, 2011

Date of Report (Date of earliest event reported)

ADVANCED MICRO DEVICES, INC.

(Exact name of registrant as specified in its charter)

Delaware
(State of
Incorporation)

001-07882
(Commission
File Number)

94-1692300
(IRS Employer
Identification Number)

One AMD Place
P.O. Box 3453
Sunnyvale, California 94088-3453
(Address of principal executive offices) (Zip Code)

(408) 749-4000
(Registrant's telephone number, including area code)

N/A
(Former Name or Former Address, if Changed Since Last Report)

Check the appropriate box below if the Form 8-K filing is intended to simultaneously satisfy the filing obligation of the registrant under any of the following provisions:

- ☐ Written communications pursuant to Rule 425 under the Securities Act (17 CFR 230.425)
 - ☐ Soliciting material pursuant to Rule 14a-12 under the Exchange Act (17 CFR 240.14a-12)
 - ☐ Pre-commencement communications pursuant to Rule 14d-2(b) under the Exchange Act (17 CFR 240.14d-2(b))
 - ☐ Pre-commencement communications pursuant to Rule 13e-4(c) under the Exchange Act (17 CFR 240.13e-4(c))
-
-

NEWS RELEASE

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AMD Reports First Quarter Results

- AMD revenue \$1.61 billion, 2 percent sequential decrease and 2 percent increase year-over-year
- Net income \$510 million, earnings per share \$0.68, operating income \$54 million
- Non-GAAP^{1,2} net income \$56 million, earnings per share \$0.08, operating income \$92 million
- Gross margin 43 percent, non-GAAP gross margin 45 percent

SUNNYVALE, Calif. – Apr. 21, 2011 – AMD (NYSE:AMD) today announced revenue for the first quarter of 2011 of \$1.61 billion, net income of \$510 million, or \$0.68 per share, and operating income of \$54 million. The company reported non-GAAP net income of \$56 million, or \$0.08 per share, and non-GAAP operating income of \$92 million.

“First quarter operating results were highlighted by strong demand for our first generation of AMD Fusion Accelerated Processing Units (APUs),” said Thomas Seifert, CFO and interim CEO. “APU unit shipments greatly exceeded our expectations, and we are excited to build on that momentum now that we are shipping our ‘Llano’ APU.”

GAAP Financial Results

	Q1-11	Q4-10	Q1-10
Revenue	\$ 1.61B	\$ 1.65B	\$ 1.57B
Operating income	\$ 54M	\$ 413M	\$ 182M
Net income / Earnings per share	\$510M/\$0.68	\$375M/\$0.50	\$257M/\$0.35

Non-GAAP Financial Results¹

	Q1-11	Q4-10	Q1-10
Revenue	\$ 1.61B	\$ 1.65B	\$ 1.57B
Operating income	\$ 92M	\$ 141M	\$ 130M
Net income / Earnings per share	\$56M/\$0.08	\$106M/\$0.14	\$63M/\$0.09

-more-

Quarterly Summary

- Gross margin was 43 percent.
 - Non-GAAP gross margin was 45 percent, flat sequentially.
- Cash, cash equivalents and marketable securities balance at the end of the quarter was \$1.75 billion.
- Computing Solutions segment revenue decreased 2 percent sequentially and increased 3 percent year-over-year. The sequential decrease was driven primarily by lower average selling price (ASP) partially offset by higher desktop microprocessor sales. The year-over-year increase was primarily driven by strong microprocessor unit sales in the channel.
 - Operating income was \$100 million, compared with \$91 million in Q410 and \$146 million in Q110.
 - Microprocessor ASP decreased sequentially and year-over-year.
 - AMD commenced revenue shipments of AMD's first Fusion APU for mainstream notebooks (codenamed "Llano") that combines discrete-class graphics capabilities, personal supercomputing performance and AMD AllDay™ power.
 - Acer, Asus, Dell, Fujitsu, HP, Lenovo, MSI, Sony and Toshiba shipped sleek new thin-and-light notebooks based on AMD's low-power APUs capable of delivering high definition visual experiences and extended battery life.
 - More than 50 applications from software companies including Adobe, ArcSoft, Corel, CyberLink and Microsoft take advantage of the incredible compute power found in AMD's APUs and GPUs to dramatically improve application performance and power efficiency.
 - AMD launched the world's first APU specifically designed for embedded systems with a record number of embedded partners for the company. Fujitsu, Kontron, Quixant and Congatec announced APU-based solutions for graphics-intensive markets like digital signage, Internet-ready set top boxes, casino gaming machines and point-of-sale kiosks. Acer, Cray, Dell, HP, SGI and other server manufacturers launched new or updated systems based on five newly introduced AMD Opteron™ 6100 series processors.
 - In the high performance computing market (HPC), AMD Opteron-based solutions continue to gain traction based on their greater scalability. New customer wins include Lockheed Martin's cluster for the US Department of Defense and the University of Sao Paulo's cluster to enable advanced scientific astronomical research.
 - AMD expanded its enthusiast desktop offerings with the introduction of its fastest four-core processor, the AMD Phenom™ II X4 975 Black Edition.
- Graphics segment revenue decreased 3 percent sequentially and was flat year-over-year. The sequential decrease was driven primarily by a seasonal decline in royalties received in connection with the sale of game console systems.
 - Operating income was \$19 million, compared with \$68 million in Q410 and \$47 million in Q110.
 - GPU ASP decreased sequentially and year-over-year.
 - AMD maintained its graphics performance leadership position with the launch of the world's fastest graphics card, the AMD Radeon™ HD 6990.
 - Apple refreshed its Macbook Pro line-up with the new AMD Radeon HD 6490M and HD 6750M graphics chips. AMD now provides discrete graphics solutions across Apple's iMac and Macbook Pro product lines.
 - Strong industry adoption of AMD's mobile graphics continued, as HP and Dell launched new designs powered by the new AMD Radeon™ HD6000M family of graphics processors.

-more-

Current Outlook

AMD's outlook statements are based on current expectations. The following statements are forward looking, and actual results could differ materially depending on market conditions and the factors set forth under "Cautionary Statement" below.

AMD expects revenue to be flat to slightly down sequentially for the second quarter of 2011.

For additional detail regarding AMD's results and outlook please see the CFO commentary posted at quarterlyearnings.amd.com.

AMD Teleconference

AMD will hold a conference call for the financial community at 2:00 p.m. PT (5:00 p.m. ET) today to discuss its first quarter financial results. AMD will provide a real-time audio broadcast of the teleconference on the Investor Relations page of its Web site at AMD. The webcast will be available for 10 days after the conference call.

Reconciliation of GAAP to Non-GAAP Net Income ^{1,3}

(Millions except per share amounts)

	Q1-11		Q4-10		Q1-10	
	\$510	\$0.68	\$375	\$0.50	\$257	\$0.35
GAAP net income / Earnings per share						
Gross margin benefit due to deconsolidation of GLOBALFOUNDRIES	—	—	—	—	69	0.09
Gain on the fair value assessment of investment in GLOBALFOUNDRIES	—	—	—	—	325	0.45
Equity income (loss) and dilution gain in investee, net	492	0.66	27	0.05	(183)	(0.25)
Payment to GLOBALFOUNDRIES	(24)	(0.03)	—	—	—	—
Non-GAAP net income excluding GLOBALFOUNDRIES related items	42	0.06	348	0.47	46	0.06
Amortization of acquired intangible assets	(9)	(0.01)	(11)	(0.01)	(17)	(0.02)
Legal settlements	(5)	(0.01)	283	0.39	—	—
Income tax related to legal settlements	—	—	(47)	(0.06)	—	—
Gain on investment sale	—	—	17	0.02	—	—
Non-GAAP net income / Earnings per share	\$ 56	\$0.08	\$106	\$0.14	\$ 63	\$0.09

Reconciliation of GAAP to Non-GAAP Operating Income ^{1,3}

(Millions)

	Q1-11	Q4-10	Q1-10
	\$ 54	\$413	\$182
GAAP operating income			
Payment to GLOBALFOUNDRIES	(24)	—	—
Gross margin benefit due to deconsolidation of GLOBALFOUNDRIES	—	—	69
Amortization of acquired intangible assets	(9)	(11)	(17)
Legal settlements	(5)	283	—
Non-GAAP operating income	\$ 92	\$141	\$130

Reconciliation of GAAP to Non-GAAP Gross Margin ^{1,3}

(Millions except percentages)

	Q1-11	Q4-10	Q1-10
	\$691	\$743	\$741
GAAP Gross Margin			
GAAP Gross Margin %	43%	45%	47%
Gross margin benefit due to deconsolidation of GLOBALFOUNDRIES	—	—	69
Legal settlements	(5)	—	—
Payment to GLOBALFOUNDRIES	(24)	—	—
Non-GAAP Gross Margin	\$720	\$743	\$672
Non-GAAP Gross Margin %	45%	45%	43%

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About AMD

AMD (NYSE: AMD) is a semiconductor design innovator leading the next era of vivid digital experiences with its groundbreaking AMD Fusion Accelerated Processing Units (APUs) that power a wide range of computing devices. AMD's server computing products are focused on driving industry-leading cloud computing and virtualization environments. AMD's superior graphics technologies are found in a variety of solutions ranging from game consoles, PCs to supercomputers. For more information, visit <http://www.amd.com>.

Cautionary Statement

This release contains forward-looking statements concerning AMD, its second quarter 2011 revenue and demand for the Company's products, which are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as "would," "may," "expects," "believes," "plans," "intends," "projects," and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this release are based on current beliefs, assumptions and expectations, speak only as of the date of this release and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Risks include the possibility that Intel Corporation's pricing, marketing and rebating programs, product bundling, standard setting, new product introductions or other activities targeting the company's business will prevent attainment of the company's current plans; the company will be unable to develop, launch and ramp new products and technologies in the volumes and mix required by the market and at mature yields on a timely basis; GLOBALFOUNDRIES will be unable to manufacture the company's products on a timely basis in sufficient quantities and using competitive technologies; the company will be unable to obtain sufficient manufacturing capacity or components to meet demand for its products or will under-utilize its commitment with respect to GLOBALFOUNDRIES' microprocessor manufacturing facilities; the recent earthquake and tsunami in Japan may have significant impacts on the company's supply chain or its customers; the company will be unable to transition its products to advanced manufacturing process technologies in a timely and effective way; global business and economic conditions will not continue to improve or will worsen resulting in lower than currently expected demand; demand for computers and consumer electronics products and, in turn, demand for the company's products will be lower than currently expected; customers stop buying the company's products or materially reduce their demand for its products; the company will require additional funding and may not be able to raise funds on favorable terms or at all; there will be unexpected variations in market growth and demand for the company's products and technologies in light of the product mix that it may have available at any particular time or a decline in demand; and the company will be unable to maintain the level of investment in research and development that is required to remain competitive. Investors are urged to review in detail the risks and uncertainties in the company's Securities and Exchange Commission filings, including but not limited to the Annual Report on Form 10-K for the year ended December 25, 2010.

-30-

AMD, the AMD Arrow logo, AMD Opteron, AMD Radeon, and combinations thereof, and are trademarks of Advanced Micro Devices, Inc. Other names are for informational purposes only and used to identify companies and products and may be trademarks of their respective owner.

¹ In this press release, in addition to GAAP financial results, the Company has provided non-GAAP financial measures, including for non-GAAP net income excluding GLOBALFOUNDRIES related items, non-GAAP net income, non-GAAP operating income, non-GAAP earnings per share and non-GAAP

-more-

gross margin. These non-GAAP financial measures reflect certain adjustments as presented in the tables in this press release. The Company also provided Adjusted EBITDA and non-GAAP Adjusted free cash flow as supplemental measures of its performance. These items are defined in the footnotes to the selected corporate data tables provided at the end of this press release. The Company is providing these financial measures because it believes this non-GAAP presentation makes it easier for investors to compare its operating results for current and historical periods and also because the Company believes it assists investors in comparing the Company's performance across reporting periods on a consistent basis by excluding items that it does not believe are indicative of its core operating performance and for the other reasons described in the footnotes to the selected data tables.

² For the year 2010, the Company accounted for its investment in GLOBALFOUNDRIES under the equity method of accounting. Starting in the first quarter of 2011, the Company started accounting for its investment in GLOBALFOUNDRIES under the cost method of accounting.

³ Refer to corresponding tables at the end of this press release for additional AMD data.

ADVANCED MICRO DEVICES, INC.
CONSOLIDATED STATEMENTS OF OPERATIONS
(Millions except per share amounts and percentages)

	Quarter Ended		
	Apr. 2, 2011	Dec. 25, 2010	Mar. 27, 2010
Net revenue	\$1,613	\$1,649	\$1,574
Cost of sales	922	906	833
Gross margin	691	743	741
Gross margin %	43%	45%	47%
Research and development	367	352	323
Marketing, general and administrative	261	250	219
Legal settlement	—	(283)	—
Amortization of acquired intangible assets	9	11	17
Operating income	54	413	182
Interest income	3	2	3
Interest expense	(48)	(39)	(49)
Other income (expense), net	11	14	304
Income before equity income (loss) and dilution gain in investee and income taxes	20	390	440
Provision for income taxes	2	42	—
Equity income (loss) and dilution gain in investee, net	492	27	(183)
Net income	\$ 510	\$ 375	\$ 257
Net income per common share			
Basic	\$ 0.71	\$ 0.52	\$ 0.36
Diluted	\$ 0.68	\$ 0.50	\$ 0.35
Shares used in per share calculation			
Basic	720	717	707
Diluted	764	758	754

ADVANCED MICRO DEVICES, INC.
CONSOLIDATED BALANCE SHEETS
(Millions)

	Apr. 2, 2011	Dec. 25, 2010
Assets		
Current assets:		
Cash, cash equivalents and marketable securities	\$ 1,745	\$ 1,789
Accounts receivable, net	797	968
Inventories, net	648	632
Prepaid expenses and other current assets	221	205
Total current assets	3,411	3,594
Property, plant and equipment, net	676	700
Investment in GLOBALFOUNDRIES	486	—
Acquisition related intangible assets, net	28	37
Goodwill	323	323
Other assets	285	310
Total Assets	\$ 5,209	\$ 4,964
Liabilities and Stockholders' Equity		
Current liabilities:		
Accounts payable	\$ 411	\$ 376
Accounts payable to GLOBALFOUNDRIES	127	205
Accrued liabilities	605	698
Deferred income on shipments to distributors	165	143
Other short-term obligations	34	229
Current portion of long-term debt and capital lease obligations	4	4
Other current liabilities	29	19
Total current liabilities	1,375	1,674
Long-term debt and capital lease obligations, less current portion	2,192	2,188
Other long-term liabilities	84	82
Accumulated loss in excess of investment in GLOBALFOUNDRIES	—	7
Stockholders' equity:		
Capital stock:		
Common stock, par value	7	7
Additional paid-in capital	6,611	6,575
Treasury stock, at cost	(104)	(102)
Accumulated deficit	(4,958)	(5,468)
Accumulated other comprehensive income	2	1
Total stockholders' equity	1,558	1,013
Total Liabilities and Stockholders' Equity	\$ 5,209	\$ 4,964

ADVANCED MICRO DEVICES, INC.
CONSOLIDATED STATEMENT OF CASH FLOWS
(Millions)

	Quarter Ended Apr. 2, 2011
Cash flows from operating activities:	
Net income	\$ 510
Adjustments to reconcile net income to net cash used in operating activities:	
Equity income (loss) and dilution gain in investee	(492)
Depreciation and amortization	88
Compensation recognized under employee stock plans	27
Non-cash interest expense	5
Provision (benefit) for deferred income taxes	9
Other	11
Changes in operating assets and liabilities:	
Accounts receivable	(195)
Inventories	(16)
Prepaid expenses and other current assets	(11)
Other assets	10
Accounts payable to GLOBALFOUNDRIES	(78)
Accounts payable, accrued liabilities and other	(36)
Net cash used in operating activities	(168)
Cash flows from investing activities:	
Purchases of property, plant and equipment	(38)
Purchases of available-for-sale securities	(393)
Proceeds from sale and maturity of available-for-sale securities	434
Other	(17)
Net cash used in investing activities	(14)
Cash flows from financing activities:	
Proceeds from borrowings, net of issuance cost	165
Net proceeds from foreign grants	7
Proceeds from issuance of common stock	9
Repayments of debt and capital lease obligations	(1)
Other	(2)
Net cash provided by financing activities	178
Net decrease in cash and cash equivalents	(4)
Cash and cash equivalents at beginning of period	606
Cash and cash equivalents at end of period	\$ 602

ADVANCED MICRO DEVICES, INC.
SELECTED CORPORATE DATA
(Millions except headcount)

Segment and Category Information	Quarter Ended		
	Apr. 2, 2011	Dec. 25, 2010	Mar. 27, 2010
Computing Solutions (1)			
Net revenue	\$ 1,200	\$ 1,219	\$ 1,160
Operating income	\$ 100	\$ 91	\$ 146
Graphics (2)			
Net revenue	413	424	409
Operating income	19	68	47
All Other (3)			
Net revenue	—	6	5
Operating income (loss)	(65)	254	(11)
Total			
Net revenue	\$ 1,613	\$ 1,649	\$ 1,574
Operating income	\$ 54	\$ 413	\$ 182
Other Data			
Depreciation and amortization (excluding amortization of acquired intangible assets)	\$ 79	\$ 78	\$ 83
Capital additions	\$ 38	\$ 38	\$ 48
Adjusted EBITDA (4)	\$ 198	\$ 241	\$ 302
Cash, cash equivalents and marketable securities	\$ 1,745	\$ 1,789	\$ 1,932
Adjusted free cash flow (5)	\$ 154	\$ 11	\$ 177
Total assets	\$ 5,209	\$ 4,964	\$ 5,232
Long-term debt and capital lease obligations, including the current portion	\$ 2,196	\$ 2,192	\$ 2,604
Headcount	11,256	11,068	10,365

See footnotes on the next page

- (1) Computing Solutions segment includes microprocessors, chipsets and embedded processors.
- (2) Graphics segment includes graphics, video and multimedia products developed for use in desktop and notebook computers, including home media PCs, professional workstations, servers and also includes royalties received in connection with the sale of game console systems that incorporate the Company's graphics technology.
- (3) All Other category includes certain operating expenses and credits that are not allocated to the operating segments. Also included in this category are amortization of acquired intangible assets and restructuring charges. It also includes the results of the Handheld business unit because the operating results of this business unit were not material.
- (4) **AMD reconciliation of GAAP operating income to Adjusted EBITDA***

	Quarter Ended		
	Apr. 2, 2011	Dec. 25, 2010	Mar. 27, 2010
GAAP operating income	\$ 54	\$ 413	\$ 182
Payment to GLOBALFOUNDRIES	24	—	—
Legal settlement	5	(283)	—
Depreciation and amortization	79	78	83
Employee stock-based compensation expense	27	22	20
Amortization of acquired intangible assets	9	11	17
Adjusted EBITDA	\$ 198	\$ 241	\$ 302

- (5) **Non-GAAP adjusted free cash flow reconciliation****

	Quarter Ended		
	Apr. 2, 2011	Dec. 25, 2010	Mar. 27, 2010
GAAP net cash provided by (used in) operating activities	\$(168)	\$ (213)	\$ 23
Non-GAAP adjustment	360	262	202
Non-GAAP net cash provided by operating activities	192	49	225
Purchases of property, plant and equipment	(38)	(38)	(48)
Non-GAAP adjusted free Cash Flow	\$ 154	\$ 11	\$ 177

* Starting with the quarter ended December 26, 2009, the Company presented "Adjusted EBITDA" as a supplemental measure of its performance. Adjusted EBITDA for the Company was determined by adjusting operating income (loss) for depreciation and amortization, employee stock-based compensation expense and amortization of acquired intangible assets. In addition, for the first quarter of 2011, the Company included an adjustment related to a payment to GLOBALFOUNDRIES and a legal settlement with a third party; and for the fourth quarter of 2010, the Company included an adjustment related to its legal settlement with a third party. The Company calculates and communicates Adjusted EBITDA in the financial schedules because the Company's management believes it is of importance to investors and lenders in relation to its overall capital structure and its ability to borrow additional funds. In addition, the Company presents Adjusted EBITDA because it believes this measure assists investors in comparing its performance across reporting periods on a consistent basis by excluding items that the Company does not believe are indicative of its core operating performance. The Company's calculation of Adjusted EBITDA may or may not be consistent with the calculation of this measure by other companies in the same industry. Investors should not view Adjusted EBITDA as an alternative to the GAAP operating measure of operating income (loss) or GAAP liquidity measures of cash flows from operating, investing and financing activities. In addition, Adjusted EBITDA does not take into account changes in certain assets and liabilities as well as interest and income taxes that can affect cash flows.

** Starting in the first quarter of 2010, the Company presents non-GAAP adjusted free cash flow as a supplemental measure of its performance. In 2008 and 2009 the Company and certain of its subsidiaries (collectively, the "AMD Parties") entered into supplier agreements with IBM Credit LLC and certain of its subsidiaries, (collectively, the "IBM Parties"). Pursuant to these supplier agreements, the AMD Parties sold to the IBM Parties invoices of selected distributor customers. Because the Company does not recognize revenue until its distributors sell its products to their customers, under U.S. GAAP, the Company classifies funds received from the IBM Parties as debt on the balance sheet. Moreover, for cash flow purposes, these funds are classified as cash flows from financing activities. When a distributor pays the applicable IBM Party, the Company reduces the distributor's accounts receivable and the corresponding debt resulting in a non-cash accounting entry. Because the Company does not receive the cash from the distributor to reduce the accounts receivable, the distributor's payment is never reflected in the Company's cash flows from operating activities. Non-GAAP adjusted free cash flow for the Company was determined by adjusting GAAP net cash provided by (used in) operating activities by adding the distributors' payments to the IBM Parties to GAAP net cash provided by (used in) operating activities. This amount is then further adjusted by subtracting capital expenditures. Generally, under U.S. GAAP, the reduction in accounts receivable is assumed to be a source of operating cash flows. Therefore, the Company believes that treating the payments from its distributor customers to the IBM Parties as if the Company actually received the cash from the distributor and then used that cash to pay down the debt is more reflective of the economic substance of the transaction. On February 11, 2011, the Company terminated its supplier agreements with the IBM Parties. The Company calculates and communicates non-GAAP adjusted free cash flow in the financial schedules because the Company's management believes it is of importance to investors to understand the nature of these cash flows. The Company's calculation of non-GAAP Adjusted free cash flow may or may not be consistent with the calculation of this measure by other companies in the same industry. Investors should not view non-GAAP Adjusted Free Cash Flow as an alternative to GAAP liquidity measures of cash flows from operating or financing activities.

**AMD Reports First Quarter 2011 Results – CFO Commentary****April 21, 2011**

A reconciliation for all non-GAAP financial measures discussed in this commentary to the most directly comparable GAAP financial measures is included below and in our financial tables that accompany our earnings press release available on quarterlyearnings.amd.com

First Quarter 2011 Results

- AMD revenue \$1.61 billion, 2% sequential decline; 2% increase year-over-year
- Net income \$510 million, EPS \$0.68, operating income \$54 million
- Non-GAAP net income \$56 million, EPS \$0.08, operating income \$92 million
- Gross margin 43%
- Non-GAAP gross margin 45%

Q1 2011 Commentary

Revenue was \$1.61 billion, down 2% compared to the fourth quarter of 2010 and up 2% compared to the first quarter of 2010.

The quarter-over-quarter decline was primarily due to:

- a seasonally driven decline in game console revenue
- lower server and notebook microprocessor sales driven by ASP declines

Non-GAAP gross margin was 45%, flat quarter-over-quarter due to:

- a seasonally driven decline in game console revenue
- a weaker mix in legacy MPU products offset by higher volume in new, lower-cost, margin accretive APUs (Brazos platform) and lower than anticipated 32nm manufacturing costs

Operating expenses were \$628 million, significantly less than the guided \$650 million due to tight expense management.

- **R&D** was \$367 million
- **SG&A** was \$261 million, which includes a separation payment to AMD's former CEO



Non-GAAP operating income was \$92 million, which excludes the impact of:

- \$24 million in cost of sales related to a payment to GLOBALFOUNDRIES (GF) primarily related to certain manufacturing assets of GF which do not benefit AMD
- a charge related to a legal settlement and amortization of acquired intangible assets

Non-GAAP net income was \$56 million, which excludes:

- a noncash gain of \$492 million related to the dilution of our equity interest in GF in Q1'11 as a result of the combination of Chartered Semiconductor and GF
- \$24 million in cost of sales related to a payment to GF primarily related to certain manufacturing assets of GF which do not benefit AMD
- a charge related to a legal settlement and amortization of acquired intangible assets

Non-GAAP diluted EPS was 8 cents in the first quarter of 2011, calculated using 740 million fully diluted shares. The shares used to calculate AMD's first quarter GAAP EPS is 764 million on a fully diluted basis. The GAAP diluted share count is higher than the non-GAAP diluted share count due to the inclusion of common shares issuable upon conversion of the 5.75% convertible notes, which become dilutive above 30 cents EPS, and were therefore dilutive to first quarter GAAP EPS of 68 cents.

Adjusted EBITDA was \$198 million, down \$43 million from the prior quarter primarily due to the decline in revenue and an increase in operating expenses.

Q1 2011 Segment Results – Computing Solutions

Computing Solutions segment revenue was \$1.2 billion, down 2% compared to the fourth quarter of 2010, primarily due to:

- lower server and notebook microprocessor sales driven by ASP declines, partially offset by higher desktop microprocessor sales
- weak demand in mature markets partially offset by moderate growth in demand in emerging economies

APU platforms are gaining traction in the market as evidenced by a faster than anticipated ramp as unit shipments tripled over the prior quarter. Adding to this momentum, we started shipping Llano, our high-end APU, late in the first quarter of 2011.

Computing Solutions operating income was \$100 million, up \$9 million from the previous quarter, primarily due to improved gross margins from a higher mix of APU sales compared to the prior quarter.



Q1 2011 Segment Results – Graphics

Graphics segment revenue was \$413 million, down 3% compared to the fourth quarter of 2010 mainly due to:

- a seasonally driven decline in game console revenue and lower ASPs of GPUs sold into the AIB and retail channel
- partially offset by double digit growth in mobile GPU sales

Graphics segment operating income was \$19 million, down \$49 million from the fourth quarter of 2010 primarily due to seasonally lower game console revenue.

Balance Sheet

Our cash, cash equivalents and marketable securities balance at the end of the quarter was \$1.75 billion, down \$44 million compared to the end of the fourth quarter of 2010.

Accounts Receivable at the end of the quarter was \$797 million, down \$171 million compared to the end of the fourth quarter of 2010, primarily due to timing of sales.

Inventory was \$648 million exiting the quarter.

Long term debt as of the end of the quarter was \$2.2 billion.

Non-GAAP Adjusted free cash flow was \$154 million, up \$143 million from the fourth quarter of 2010 due to higher non-GAAP net cash provided by operating activities.

- Starting with the first quarter of 2010, AMD began presenting non-GAAP adjusted free cash flow as a supplemental measure of its performance to adjust for the impact of our receivable funding arrangement with IBM Credit. In February 11, 2011 we terminated this funding program. We expect to transition away from making adjustments related to this program to our GAAP net cash provided by operating activities. As a result, we expect that as of the third quarter of 2011, free cash flow will be calculated traditionally in accordance with industry standards.

Outlook

The following statements concerning AMD are forward-looking, and actual results could differ materially from current expectations.

Q2 2011:

- AMD expects second quarter revenue to be flat to slightly down
- Operating expenses are expected to be approximately \$620 million



Wafer Supply Agreement (WSA) – as amended in Q1 2011

In the first quarter of 2011, AMD amended its WSA with GF. The financial impact of the WSA amendment is outlined below:

- In 2011: AMD expects to pay GF between \$1.1 and \$1.5B for wafer purchases.*
- In 2012: AMD expects to pay GF between \$1.5 and \$1.9B for wafer purchases.* AMD will resume compensating GF on a cost-plus basis to manufacture wafers for our MPU and APU products.
- Beyond 2012: AMD expects future purchases from GF will continue to be material under the WSA.

(These costs could increase or decrease as a result of variations in yields and several other factors, including our current expectations regarding demand for our products.)*

AMD held a conference call on April 4, 2011 related to the WSA amendment. Further details about the WSA amendment and access to the replay of the conference call and webcast can be accessed at <http://ir.amd.com>.

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**Non-GAAP Measures:**

To supplement the Company's financial results calculated in accordance with United States generally accepted accounting principles (GAAP), this commentary contains non-GAAP financial measures, including for non-GAAP net income (loss) excluding GF related items, non-GAAP net income (loss), non-GAAP operating income (loss), non-GAAP earnings per share and non-GAAP gross margin. These non-GAAP financial measures reflect certain adjustments, and the Company has presented a reconciliation of GAAP to non-GAAP financial measures in the tables below.

The Company also provided Adjusted EBITDA and non-GAAP Adjusted free cash flow as supplemental measures of its performance.

Adjusted EBITDA for the Company is determined by adjusting operating income (loss) for depreciation and amortization, employee stock-based compensation expense and amortization of acquired intangible assets. In addition, for the first quarter of 2011, the Company included an adjustment related to a payment to GLOBALFOUNDRIES and a legal settlement with a third party; and for the fourth quarter of 2010, the Company included an adjustment related to its legal settlement with a third party. The Company calculates and communicates Adjusted EBITDA in the financial schedules because the Company's management believes it is of importance to investors and lenders in relation to its overall capital structure and its ability to borrow additional funds. In addition, the Company presents Adjusted EBITDA because it believes this measure assists investors in comparing its performance across reporting periods on a consistent basis by excluding items that the Company does not believe are indicative of its core operating performance. The Company's calculation of Adjusted EBITDA may or may not be consistent with the calculation of this measure by other companies in the same industry. Investors should not view Adjusted EBITDA as an alternative to the GAAP operating measure of operating income (loss) or GAAP liquidity measures of cash flows from operating, investing and financing activities. In addition, Adjusted EBITDA does not take into account changes in certain assets and liabilities as well as interest and income taxes that can affect cash flows.

Starting in the first quarter of 2010, the Company presents non-GAAP adjusted free cash flow as a supplemental measure of its performance. In 2008 and 2009, the Company and certain of its subsidiaries (collectively, the "AMD Parties") entered into supplier agreements with IBM Credit LLC and certain of its subsidiaries, (collectively, the "IBM Parties"). Pursuant to these supplier agreements, the AMD Parties sold to the IBM Parties invoices of selected distributor customers. Because the Company does not recognize revenue until its distributors sell its products to their customers, under U.S. GAAP, the Company classifies funds received from the IBM Parties as debt on the balance sheet. Moreover, for cash flow purposes, these funds are classified as cash flows from financing activities. When a distributor pays the applicable IBM Party, the Company reduces the distributor's accounts receivable and the corresponding debt resulting in a non-cash accounting entry. Because the Company does not receive the cash from the distributor to reduce the accounts receivable, the distributor's payment is never reflected in the Company's cash flows from operating activities. Non-GAAP adjusted free cash flow for the Company was determined by adjusting GAAP net cash provided by (used in) operating activities by adding the distributors' payments to the IBM Parties to GAAP net cash provided by (used in) operating activities. This amount is then further adjusted by subtracting capital expenditures. Generally, under U.S. GAAP, the reduction in accounts receivable is assumed to be a source of operating cash flows. Therefore, the Company believes that treating the payments from its distributor customers to the IBM Parties as if the Company actually received the cash from the distributor and then used that



cash to pay down the debt is more reflective of the economic substance of the transaction. On February 11, 2011, the Company terminated its supplier agreements with the IBM Parties. The Company calculates and communicates non-GAAP adjusted free cash flow in the financial schedules because the Company's management believes it is of importance to investors to understand the nature of these cash flows. The Company's calculation of non-GAAP Adjusted free cash flow may or may not be consistent with the calculation of this measure by other companies in the same industry. Investors should not view non-GAAP Adjusted Free Cash Flow as an alternative to GAAP liquidity measures of cash flows from operating or financing activities.

The Company is providing these financial measures because it believes this non-GAAP presentation makes it easier for investors to compare its operating results for current and historical periods and also because the Company believes it assists investors in comparing the Company's performance across reporting periods on a consistent basis by excluding items that it does not believe are indicative of its core operating performance and for the other reasons described in the footnotes to the selected data tables.

Non-GAAP Reconciliation:

Reconciliation of GAAP to Non-GAAP Net Income

(Millions except per share amounts)

	Q1-11		Q4-10		Q1-10	
GAAP net income / Earnings per share	\$ 510	\$0.68	\$ 375	\$0.50	\$257	\$0.35
Gross margin benefit due to deconsolidation of GLOBALFOUNDRIES	—	—	—	—	69	0.09
Gain on the fair value assessment of investment in GLOBALFOUNDRIES	—	—	—	—	325	0.45
Equity income (loss) and dilution gain in investee, net	492	0.66	27	0.05	(183)	(0.25)
Payment to GLOBALFOUNDRIES	(24)	(0.03)	—	—	—	—
Non-GAAP net income excluding GLOBALFOUNDRIES related items	42	0.06	348	0.47	46	0.06
Amortization of acquired intangible assets	(9)	(0.01)	(11)	(0.01)	(17)	(0.02)
Legal settlements	(5)	(0.01)	283	0.39	—	—
Income tax related to legal settlements	—	—	(47)	(0.06)	—	—
Gain on investment sale	—	—	17	0.02	—	—
Non-GAAP net income / Earnings per share	\$ 56	\$0.08	\$ 106	\$0.14	\$ 63	\$0.09

Reconciliation of GAAP to Non-GAAP Operating Income

(Millions)

	Q1-11	Q4-10	Q1-10
GAAP operating income	\$ 54	\$ 413	\$ 182
Payment to GLOBALFOUNDRIES	(24)	—	—
Gross margin benefit due to deconsolidation of GLOBALFOUNDRIES	—	—	69
Amortization of acquired intangible assets	(9)	(11)	(17)
Legal settlements	(5)	283	—
Non-GAAP operating income	\$ 92	\$ 141	\$ 130

Reconciliation of GAAP to Non-GAAP Gross Margin

(Millions except percentages)

	Q1-11	Q4-10	Q1-10
GAAP Gross Margin	\$691	\$ 743	\$ 741
GAAP Gross Margin %	43%	45%	47%
Gross margin benefit due to deconsolidation of GLOBALFOUNDRIES	—	—	69
Legal settlements	(5)	—	—
Payment to GLOBALFOUNDRIES	(24)	—	—
Non-GAAP Gross Margin	\$720	\$ 743	\$ 672
Non-GAAP Gross Margin %	45%	45%	43%



AMD reconciliation of GAAP operating income to Adjusted EBITDA
(Millions)

	Q1-11	Q4-10	Q1-10
GAAP operating income	\$ 54	\$413	\$ 182
Payment to GLOBALFOUNDRIES	24	—	—
Legal settlements	5	(283)	—
Depreciation and amortization	79	78	83
Employee stock-based compensation expense	27	22	20
Amortization of acquired intangible assets	9	11	17
Adjusted EBITDA	\$198	\$241	\$ 302

Non-GAAP adjusted free cash flow reconciliation
(Millions)

	Q1-11	Q4-10	Q1-10
GAAP net cash provided by (used in) operating activities	\$(168)	\$ (213)	\$ 23
Non-GAAP Adjustment	360	262	202
Non-GAAP net cash provided by operating activities	192	49	225
Purchases of property, plant and equipment	(38)	(38)	(48)
Non-GAAP adjusted free cash flow	\$ 154	\$ 11	\$177

Cautionary Statement

This document contains forward-looking statements concerning AMD, our financial outlook for the second quarter of 2011, including our second quarter 2011 revenue and operating expenses, the impact of the termination of our receivable funding arrangement with IBM Credit and our expected future payments to GLOBALFOUNDRIES under the Wafer Supply Agreement, which are made pursuant to the safe harbor provisions of the Private Securities Litigation Reform Act of 1995. Forward-looking statements are commonly identified by words such as “would,” “may,” “expects,” “believes,” “plans,” “intends,” “projects,” and other terms with similar meaning. Investors are cautioned that the forward-looking statements in this release are based on current beliefs, assumptions and expectations, speak only as of the date of this release and involve risks and uncertainties that could cause actual results to differ materially from current expectations. Risks include the possibility that Intel Corporation’s pricing, marketing and rebating programs, product bundling, standard setting, new product introductions or other activities targeting the company’s business will prevent attainment of the company’s current plans; the company will be unable to develop, launch and ramp new products and technologies in the volumes and mix required by the market and at mature yields on a timely basis; GLOBALFOUNDRIES will be unable to manufacture the company’s products on a timely basis in sufficient quantities and using competitive technologies; the company will be unable to obtain sufficient manufacturing capacity or components to meet demand for its products or will under-utilize its commitment with respect to GLOBALFOUNDRIES’ microprocessor manufacturing facilities; the recent earthquake and tsunami in Japan may have significant impacts on the company’s supply chain or its customers; the company will be unable to transition its products to advanced manufacturing process technologies in a timely and effective way; global business and economic conditions will not continue to improve or will worsen resulting in lower than currently expected demand; demand for computers and consumer electronics products and, in turn, demand for the company’s products will be lower than currently expected; customers stop buying the company’s products or materially reduce their demand for its products; the company will require additional funding and may not be able to raise funds on favorable terms or at all; there will be unexpected variations in market growth and demand for the company’s products and technologies in light of the product mix that it may have available at any particular time or a decline in demand; and the company will be unable to maintain the level of investment in research and development that is required to remain competitive. Investors are urged to review in detail the risks and uncertainties in the company’s Securities and Exchange Commission filings, including but not limited to the Annual Report on Form 10-K for the year ended December 25, 2010.

Exhibit 70

Message

From: Cloran, Chris [/O=AMD/OU=AMDUS1/CN=RECIPIENTS/CN=422650]
Sent: 5/15/2011 8:35:27 PM
To: Raeder, Chris [chris.raeder@amd.com]; Kirsch, Travis [travis.kirsch@amd.com]
Subject: FW: ww20 2011 Llano Update
Attachments: Llano UpdateWW20-2011.pptx

FYI

From: Press, Patrick [Patrick.Press@globalfoundries.com]
Sent: Sunday, May 15, 2011 3:27 PM
To: Wristers, Dirk; Seifert, Thomas; 'rick.bergman@amd.com'; Akrou, Chekib; 'john.docherty@amd.com'; Grose, Douglas; CHIA, Song Hwee; Bartlett, Gregg; Ang, KC; Cloran, Chris; Kumar, Devinder; Krakauer, Robert; Eckstein, Elke; Reed, David
Cc: 'jim.seto@amd.com'; 'david.wu@amd.com'; Wagner, Bernd; Lorenz, Thomas; Wieczorek, Karsten; 'Sara Cronenwett (ATIC)'; 'Joe Zelayeta'; Venkatesan, Suresh; 'ajit.manocha@gmail.com'; Greenlaw, David; Kruegel, Stephan; Herzog, Olaf; Walter, Axel; Vatel, Olivier; Venkatesan, Suresh; Armour, Norman; Pellerin, John; Choh, Eric; Chambers, Jim
Subject: ww20 2011 Llano Update

All,

the Llano Update for WW120 is attached.

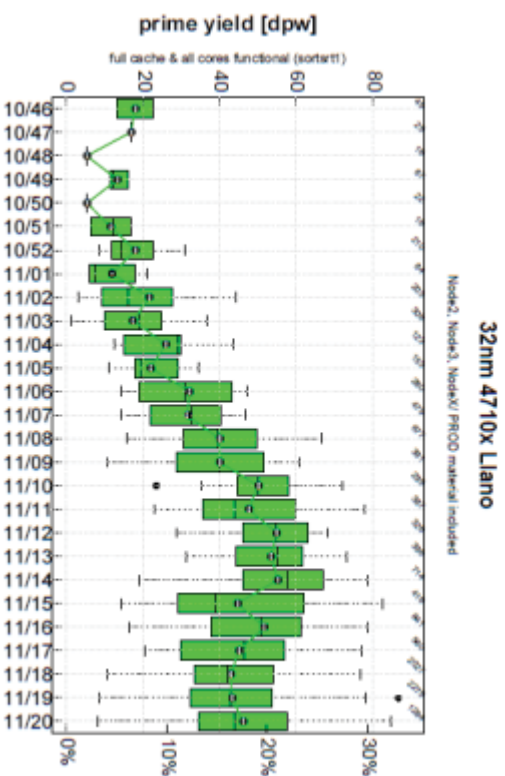
Thanks

Patrick

Produced in Native File Format



Llano Update WW20



Status WW20

- Slow recovery of yield continues in WW20. The average is at 18%. The detractors identified during WW15-17 are having less and less impact (2x voids, AY opens, missing HKMG) but the issues with FlexDS at A1 (and also at V1/V2) will soon shift the trend down.

Some more details regarding FlexDS@A1:

- the problem was initially seen in WW19 but based on low statistics. In WW20 more results were gathered at SORT and the weakness was confirmed: ca 15-20% relative yield loss for FlexDS@A1 ... also degradation if used at V1/V2.
- MRB has been triggered. 8D procedure was initiated. PCR history is being collected.
- AMD-Quality wants GF to contain wafers etched on FlexDS until reliability assessment is positive.
- escalation at vendor done and emergency meeting with LAM was run on Friday
- status of FlexDS processing and options with respect to capacity have been presented to AMD-on-site team (Jim^2)
 - root cause not yet understood...AMD's help needed. Cross-functional task force will start Monday
 - to not use FlexDS will cut capacity by more than 50%
 - team decided to not contaminate the entire WIP at V1/V2/A1 with FlexDS but to use 1271 as the „clean“ route using Flex45-only.
 - the plan is to use LAM's new „scaling methodology“ to transfer the Flex45-recipe as close as possible to FlexDS
 - first results on short loop wafers using the new process will be available on Monday (for V1)
 - the Task Force Team will set criterias as to when the data gathered for the new process is sufficient to run some WIP

#1 priority is to find the root cause of the issue. PE will drive this effort while in parallel the TD/MP/OPS-ENG/AMTD teams are running experiments on RKT-prio to check theories.

Next Week Look Ahead:

- Next week will be AMD QTR and QBR at Dresden